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The Season's Opportunities
Crop and Fallow Competitions
Control of Orchard Insect Pests
The Making of Stack Silage
Notes on Operation of Fertilizers Act



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THE JOURNAL

OF

THE DEPARTMENT OF AGRICULTURE,

VICTORIA, AUSTRALIA.

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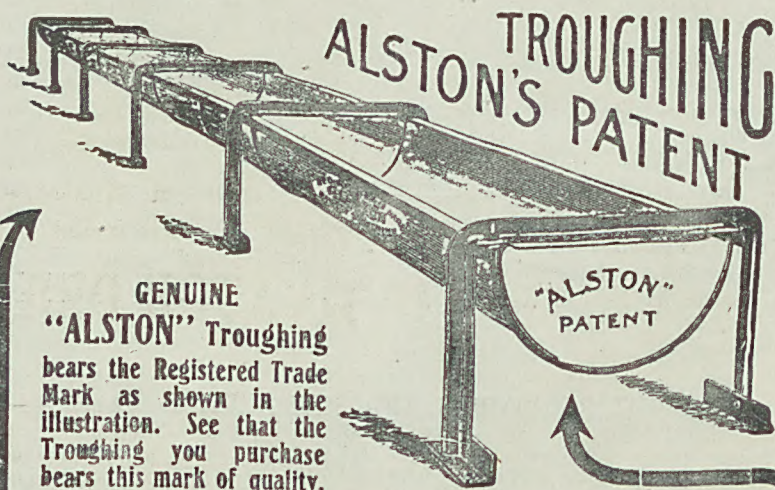
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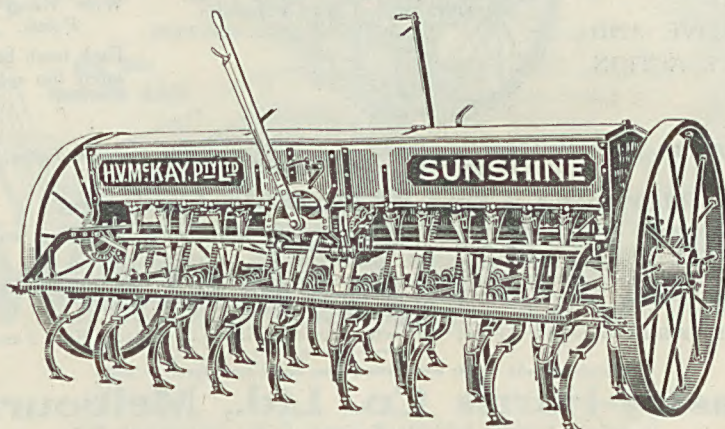
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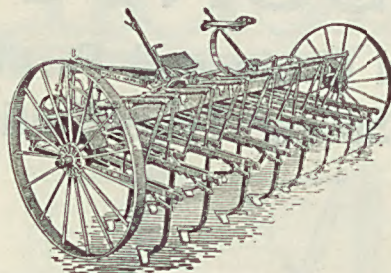
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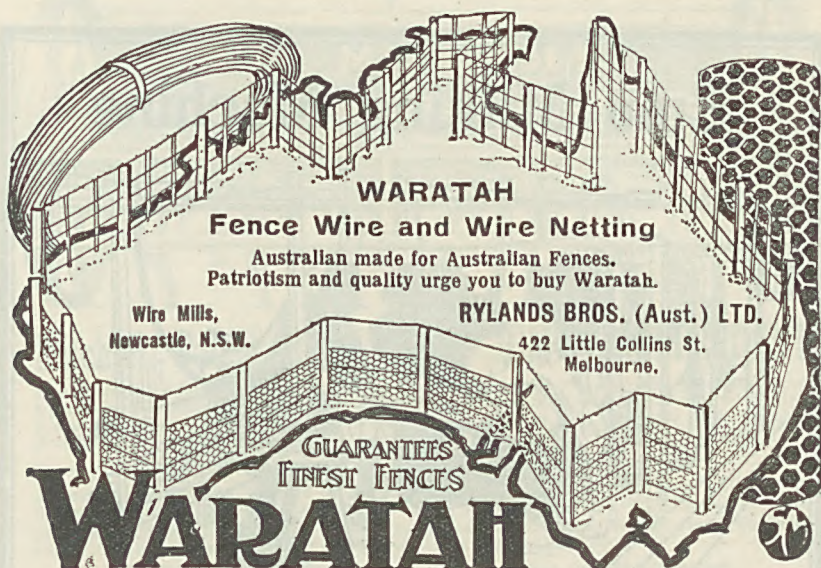
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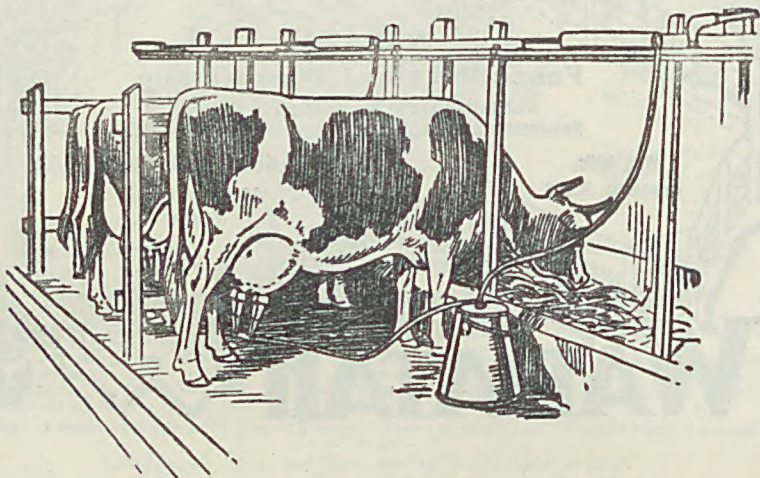
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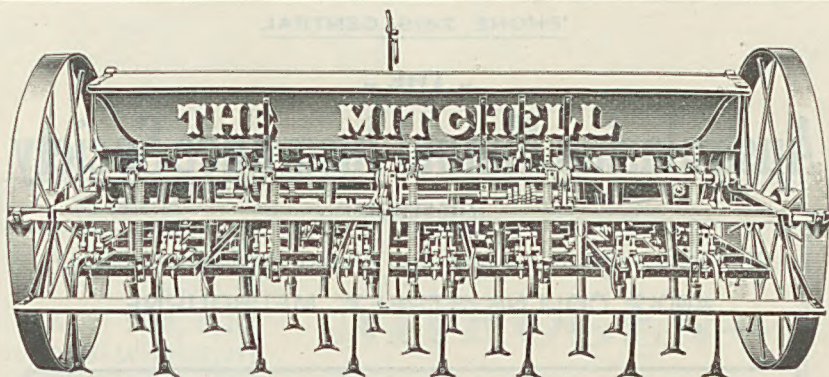
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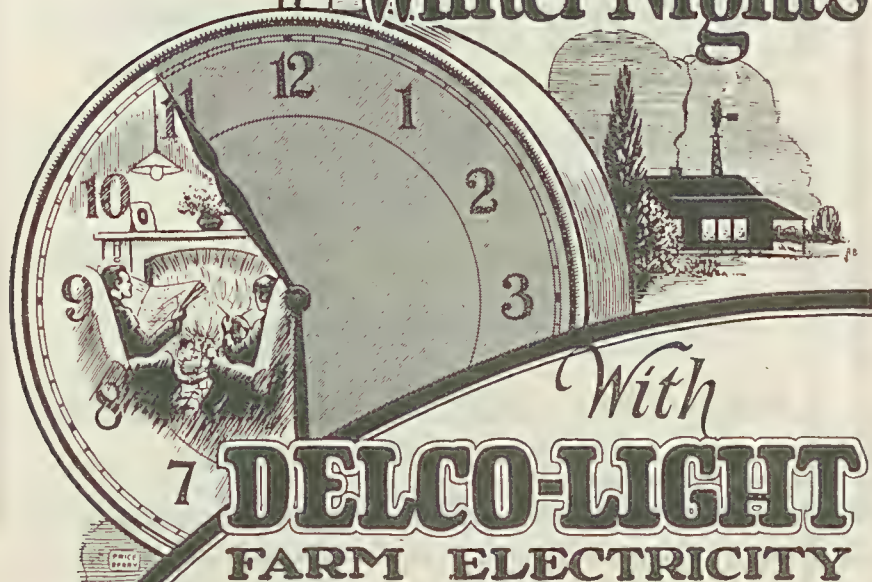
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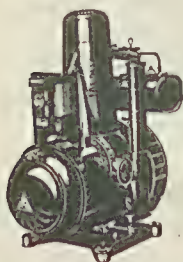
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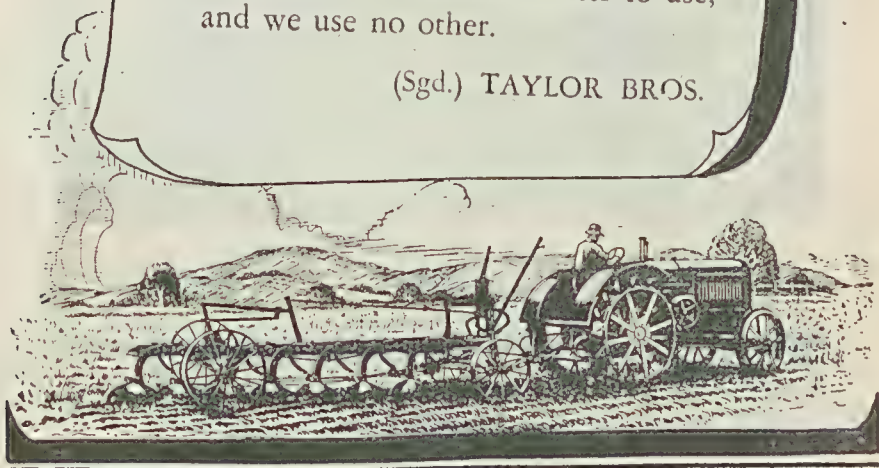
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THE JOURNAL
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Vol. XXVI.

April, 1928.

Part 4

THE SEASON'S OPPORTUNITIES.

*Address by H. A. Mullett, B.Ag.Sc., Superintendent of Agriculture,
broadcast by 3LO.*

Since mid-January, normally a season of agricultural quiescence, bountiful rains have fallen all over the State. Over the great wheat belt there was an average of from 6 to 10 inches in the first three months of the year—as much rain as fell there during the whole twelve months last season. If it be assumed that over half Victoria, the late summer and autumn precipitation was 6 inches above normal, we can calculate that about seventeen thousand million tons of water has fallen on the soil, and for the most part has been absorbed into it. Had it been possible to store the whole of this immense quantity of water by some colossal storage greater than any yet conceived by man, it would have been sufficient for two normal waterings, each 3 inches deep, of half the entire State.

Picture the conditions before the rain came. The soil was parched by last year's drought, and the rainy season was not due until mid-April, or possibly May or June. In many districts feed supplies were short; stock were having a lean time, and were likely to face the winter in low condition. Nothing at whatever cost designed could have more adequately relieved the situation and placed the pastures and the land in better heart for the coming season than those splendid rains. Rarely can the late autumn be started so much ahead of scratch and with such a favorable outlook. The question now is—Are we all going to make a race of it?

Circumstances are especially favorable to the wheat-grower and to the pastoralist and grazier, and it is for them to take advantage of the occasion which has so unexpectedly presented itself. The opportunities for the wheat-grower lie in the direction of increasing the acreage sown to wheat, sowing the land which failed last year, the elimination of weeds and rubbish from the fallows, the laying down of

a larger area of summer fallow than usual, and generally for sowing his seed in soil much more thoroughly tilled and in better condition than usual. For the pastoralist and grazier there is a splendid chance to increase the acreage of sown pastures, the conditions for the germination and growth of which are unprecedentedly good, and they should endeavour to topdress with superphosphate the balance of their pastures.

But these ideals cannot be realized unless a special effort is put forward to squeeze every ounce out of the team-strength on the farm, and to augment it, where possible, by tractors and other means. It means working early and late, and the employment of every device to increase the acreage done each day. Straight driving, the cutting out of short turns, the elimination of voluntary stops at the ends of rounds, are points that the skilled farmer will watch more than usual this year. It is surprising how attention to these details will add an acre or two to each day's work.

In view of the Hon. the Premier's appeal, the sowing of an increased acreage will be considered by many, but this is not recommended where it is likely to mean only a scratching in part of the seed. It is far sounder to concentrate upon an area which can be handled properly by the labour available. But there are many who could conveniently extend the area sown, among them being those whose crops failed last year. After the excellent summer rains we need have little doubt about securing good yields from such ground; the subsoil moisture has now been replenished, and there have been many opportunities of working it up into perfect condition for sowing. On this land only two-thirds of the normal dressing of superphosphate need be applied, since it has been proved that the residual effect of the fertilizer given in the year of crop failure is likely to be substantial.

Instead of sowing on non-fallow this year—always a risky practice—there are many who could conveniently lay down a larger area of summer fallow than usual. As there is plenty of grass, the carrying of stock will not be affected. Land which, normally, is too hard to summer-fallow could be so treated, and would constitute an excellent standby for next season's operations.

The presence of abnormal weed-growth on the fallows, however, is likely to tax seriously the team-strength on many farms. Where this is the case, it is better not to endeavour to sow increased acreages of wheat or to increase the area of summer fallow. Continual cultivation will be necessary on many paddocks in the Wimmera and Mallee and elsewhere to keep down paddy-melons. It is fatal to let these weeds get a firm hold on the soil, as tined implements cannot then be used satisfactorily. Many disc cultivators, long relegated to the shed, will have to be brought out this year to cope with the melons, but owing to the moist state of the soil they will not damage the fallow on friable soils, if care be taken to keep the discs as near the surface as is yet convenient for the working of the machine. Once the melons have been knocked about and wilted, sheep will eat them readily, but not before.

In the Goulburn Valley, on the stiffer red soils, many of the fallows have been beaten flat by the rain, and owing to the difficulty of getting on the land until it dries out, the cultivation of the fallows has been

delayed. On these soils great judgment must be exercised if too fine a tilth is to be avoided. However, farmers are now better equipped to handle them than formerly, as the Wimmera-type scarifiers and rigid-tined cultivators have been widely adopted. Where the land is too hard for these, recourse must be made to the disc cultivator.

Many are likely to be tempted this year to sow abnormally early, especially in the newer Mallee districts, where double acreages are being sown. On the stiffer and wetter soils in the Goulburn Valley the farmer will have to consider the possibility of not being able to get on the land after the beginning of June, if the winter be at all wet, but it will pay almost every one else to await the normal seeding-time. Early sowing this year will undoubtedly result in rapid growth, and may produce tall, rank, poor-yielding crops, and, more especially in the northern Mallee, lead to the wheat at flowering-time being caught by late frosts, as was the case two or three years ago.

Having prepared a first class seed-bed, and with the knowledge that his soil is liberally endowed with moisture, the wheat-grower can optimistically sow his seed, for the foundation for a bumper crop has been laid. The varieties appropriate to the district which have been selected for seeding should be carefully winnowed and re-cleaned and pickled against bunt, a disease for the development of which conditions are favorable this year. The use of bluestone, which retards germination considerably, should be abandoned, and faith pinned to either formalin or dry copper powders, whichever is preferred. The latter pickles are very useful when sowing late in the season on damp, cold soils. The germination of the grain pickled by the dry method is as rapid as the germination of unpickled wheat.

Land well charged with moisture and well prepared is likely to support more plants per acre than land in poor heart; therefore liberal dressings of seed should be given this year—55 to 60 lb. per acre for the new Mallee, and 75 to 80 lb. elsewhere. Late in the season, or where weak germination is likely, or where weeds are likely to be abundant, the normal rate of seeding may be increased by 10 per cent.

Some may be tempted to cut down the usual dressing of fertilizer in the belief that the land, being in such good order, will not require much artificial assistance. This is a mistake, as the available supplies of phosphoric acid, always deficient, will not have been increased to any extent. From 90 lb. of superphosphate per acre should be applied on fallow in the new Mallee, and at least 1 cwt. per acre elsewhere. On non-fallowed land slightly smaller quantities would suffice.

Once the seed is sown, its fate is in the lap of the gods. But this much is certain; given reasonable spring rains, good crops will be obtained.

I should now like to say a word or two of the opportunities in the moister districts of the State. The warm rains falling on a warm soil have promoted unusually good conditions for the laying down of sown pastures. Everybody admits their superiority, but many are deterred from laying them down because of the labour involved, and, still more, because it is somewhat difficult to obtain a good germination in many districts otherwise well suited to these pastures. This is because the autumn rains are uncertain, and the seeding has often to

be delayed until the soil is cold, and germination consequently is unsatisfactory. This year these conditions do not obtain, and any one can make a success of sowing down grasses and clovers if a little care be taken. The soil is easy to work, and should be cleared of weeds and worked down to a fine, firmly consolidated seed-bed. This is all-important for grass seeds, and failure to consolidate the land properly is responsible for most poor strikes of seeded pasture. The seed should be mixed with superphosphate a few hours before sowing, and drilled as shallowly as possible. Usually the best way is to disconnect the conveyor tubes, and allow the hoes of the drill to slightly mark the soil. A light harrowing is then sufficient to cover the seed.

For rich alluvial soils and first class land generally, the following mixture is recommended:—

Perennial Rye Grass	..	..	15 lb.
White Dutch Clover	..	..	2 "
Cocksfoot	..	..	5 "
Alsike Clover	..	..	2 "
Red Clover	..	..	1 "
Prairie Grass	..	..	2 "

For good chocolate loams in Gippsland—

Cocksfoot	..	..	8 to 10 lb.
Perennial Rye Grass	..	..	5 to 8 "
Crested Dogstail	..	..	4 lb.
White Dutch Clover	..	..	2 "
Alsike	..	..	2 "
Cowgrass	..	..	1 "

For reclaimed tidal flats and rich undrained swamps, a mixture containing strawberry clover should be used. The following gives good results:—

Perennial Rye	..	..	15 lb.
Cocksfoot	..	..	5 "
Lotus Major	..	..	1 "
White Dutch Clover	..	..	1 "
Strawberry Clover	..	..	2 "

On lighter soils subterranean clover should predominate in any mixture. A little perennial rye may be added, a few pounds of Wimmera rye grass, and, if the land is not intended for cultivation, a little *paspalum*.

Heavy stock should be kept off the pasture for the first year, but it is a mistake to keep stock off it altogether. Judicious grazing, especially with sheep, promotes stooling and thickens the pasture. Thereafter the paddock is likely to have a heavy-carrying capacity, and should be so stocked that the grass is never allowed to get more than a few inches high. More sown pastures are ruined by understocking than by overstocking. From time to time the cattle-dung should be scattered by harrowing, and every few years a top-dressing of from 1 to 2 cwt. of superphosphate per acre given.

Those who cannot sow down grasses may increase the feeding value and palatability of their pastures by top-dressing them with superphosphate. Lush pastures are often deficient in feeding value, and

the use of superphosphate will make a wonderful improvement in that direction. . . The manure should be applied at once at the rate of 1 cwt. per acre, and it is quite satisfactory to apply it to the surface of the land by means of an old drill or by a broadcaster. As a rule, it need not be repeated for three years, for the residual effect of one application is considerable.

THE NORTH-EASTERN MALLEE CROP AND FALLOW COMPETITIONS.

Report by the Judges, R. G. Thomas, M.Ag.Sc., Inspector of Agriculture, and R. L. Twentyman, B.Ag.Sc., Science Field Officer.

CROP COMPETITIONS.

Owing to the extremely dry season experienced the crops throughout the North-Eastern Mallee were very poor. Those on the limestone and heavier flats were often not worth harvesting, but on the sand rises they had held out surprisingly well, due to the better moisture-holding capacity of the sand.

It is quite obvious that these limestone soils, which are very common in the Manangatang district, are not capable of producing a good crop in a dry season, although, with a wet season, they can produce excellent crops. In view of the frequency of dry seasons, a means by which the moisture-holding power of these limestone soils or the heavy flat areas could be improved would make the cropping of this land much safer. As a matter of fact, this is effected, to a certain extent, by sand from the hills drifting over the flats, so that, although drift is troublesome, it does actually result in a general improvement to these areas as seen in the older settled districts like Berriwillock.

The crops throughout the competitions, although poor, were usually very free from disease, and only three, which were badly affected by Flag Smut, could be considered to be damaged to any extent. Very little of either Ball Smut or Loose Smut was observed throughout the competition crops.

In consequence of the dry weather at seeding time and the lack of opportunity to destroy the weed seeds in the fallow, it was not surprising to find that mustard was very common throughout the crops. The thinness of the latter had further assisted the growth of the weed, and on some of the flats it had taken possession of the land.

Winnambool District.

There were only six crops entered in this competition. Mr. R. McGuigan was first with 77 points, and Mr. N. C. Jones' second with

75 points. These two competitors were also respectively first and second over the combined crop and fallow competition.

R. McGuigan was placed first with an entry of Sepoy and Currawa. The greater portion of this entry was grown on a sand rise, and the yield was considerably above the other crops in the competition. Although the Currawa was badly infested with mustard, the Sepoy was relatively free from the weed, being higher up on the sand rise. A certain amount of Flag Smut was present, and points were also lost for uneven drilling.

N. C. Jones's entry of Rancee and Sepoy was placed second. On the sand rise to the south end of the paddock the crop was good, but it was light on the flat. The crop had been sown with the combine during the middle of June, and was harrowed immediately; 55 lb. of powder-pickled seed and 60 lb. of super. were sown per acre.

DETAILS OF AWARDS—WINNAMBOOL CROP COMPETITION.

Competitor.	Yield.	True- ness to Type.	Absence of—		Even- ness.	Total Crop.	Fallow, 1926-7.	Grand Total.
			Weeds.	Disease.				
Possible Points	35	20	15	15	15	100	100	200
R. McGuigan	25	17	10	13	12	77	93	170
N. C. Jones	20	17	13	14	11	75	94	169
A. Golds	16	18	11	12	12	69	91	160
J. Cullen	17	17	11	9	13	67	83	160
W. H. Frost	15	18	13	11	13	70	85	155
E. F. Amos	19	16	11	12	10	68	83	151

Kenley District.

Owing to the better class of land in this district, the crops were generally better than in the other competitions judged. The crops of Messrs. W. C. Francis and D. Raven, which were placed first and second, were very creditable for such a dry season.

W. C. Francis was placed first with an entry of Rajah, Free Gallipoli, and Gluyas, which obtained 86 points. This paddock included a large proportion of sandhill, and the crop had a considerable advantage on this account. The crop was generally even and free from disease and weeds, but the Gluyas included a few strangers and barley. Sixty lb. of powder-pickled seed and 80 lb. of super. were combined in and harrowed at the end of May.

D. Raven obtained second place with a crop of Free Gallipoli. Most of this crop had been sown on a pine rise, and here the wheat had made excellent growth, but on the lower area mustard was much in evidence. Points were lost for wild oats and Flag Smut, which was very common throughout the crop. The type of wheat was very mixed, and included many brown strangers. The land had been combined late in May, and 60 lb. of powder-pickled seed and 85 lb. of superphosphate were sown per acre.

DETAILS OF AWARDS—KENLEY CROP COMPETITION.

Competitor.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop.	Fallow 1926-7.	Grand Total.
Possible Points ..	35	20	15	15	15	100	100	200
W. C. Francis ..	27	18	13	14	14	86	88	174
D. Raven ..	33	15	11	10	12	81	90	171
C. H. Fisher ..	17	19	13	13	11	73	90	163
C. V. Coghill ..	16	17	12	13	11	69	91	160

Pier Millan District.

Seven entries were received in this competition. Mr. R. E. Stewart and T. Anglin were respectively first and second in the crop competition, but in the combined crop and fallow E. Daniell obtained second place, whilst T. Anglin was third.

R. E. Stewart's first prize crop obtained 81 points. This crop promised to yield considerably better than other crops in the competition. It was almost entirely free from disease, and very few strangers were present. Sowing was commenced at the middle of June, and 50 lb. of seed and 70 lb. of manure were then sown; later, these quantities were increased to 60 and 95 lb.

T. Anglin's entry, which obtained second place with 77 points, was an even crop of Currawa, free from disease, but points were lost for the presence of barley. The sowing of this crop was commenced at the end of June, and 60 lb. of bluestone-pickled seed and 60 lb. of super. were sown per acre.

DETAILS OF AWARDS—PIER MILLAN CROP COMPETITION.

Competitor.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop.	Fallow, 1926-7.	Grand Total.
Possible points ..	35	20	15	15	15	100	100	200
R. E. Stewart ..	24	18	13	14	12	81	92	173
E. Daniell ..	15	13	13	14	11	71	94	165
T. Anglin ..	20	17	12	14	14	77	83	160
A. Vanderfeen ..	18	15	10	14	10	67	86	153
S. Laurence ..	13	16	10	14	11	64	82	146
J. Jury ..	16	17	13	14	11	71	74	145
G. Glowrey ..	13	14	11	14	11	63	81	144

Wemen, Liparoo, and Moss Tank District.

Six entries were received in this competition. Mr. V. R. T. Graham was placed first with 83 points, Mr. A. Wells second with 81, and Mr. N. V. Pattinson third with 78 points.

V. R. T. Graham's entry included Rajah, Rancee, Currimph, Free Gallipoli, and Sepoy. Except for a little Take-all in the Currimph, the crop was free from disease and there were few weeds. The crop had been drilled in mid-June, 58 lb. of powder-pickled seed and 93 lb. of super. being sown per acre.

A. Wells obtained second place in the crop competition, but was able to retain first place in the combined crop and fallow. This

crop was sown on a splendidly prepared fallow of pine and belar country, which, considering the dry season, had produced a very fine crop. The yield was far above any other crops in this competition, but many points were lost owing to a large number of strangers. Wide spaces between the drilling, weeds, and the presence of a certain amount of disease further helped to lose sufficient points to bring this entry down to second place.

N. V. Pattinson's entry included Sepoy, Rancee, and Free Gallipoli. Very few strangers were observed and the crop was free from disease, but points were deducted for weeds. The Sepoy was sown late in May with 50 lb. of seed, 75 lb. super., but with the Rancee and Free Gallipoli sown late in June these quantities were increased to 70 and 90 lb.

DETAILS OF AWARDS—WEMEN, LIPAROO, AND MOSS TANK CROP COMPETITION.

Competitor.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop.	Fallow, 1926-7.	Grand Total.
Possible Points ..	35	20	15	15	15	100	100	200
A. Wells ..	35	14	10	12	10	81	98	179
V. R. T. Graham ..	25	18	14	13	13	83	88	171
N. V. Pattinson ..	22	19	11	14	12	78	88	166
C. S. Neyland ..	21	16	12	13	12	74	86	160
T. J. O'Loughlin ..	21	17	12	13	12	75	83	158
F. D. Taylor ..	13	19	12	13	10	67	82	149

Manangatang District.

Only one crop was judged in this competition, the other crops having been withdrawn owing to failure. The points awarded are as follows:—

Competitor.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop.	Fallow.	Grand Total.
Possible Points ..	35	20	15	15	15	100	100	200
R. Wharton ..	18	17	11	13	13	72	77	149

Wright Cup—Inter-District Competitions.

Competitor.	Fallow.	Crop.	Aggregate.
Possible points	100	100	200
A. Wells, Wemen, Liparoo, and Moss Tank ..	98	81	179
W. C. Francis, Kenley ..	88	86	174
R. E. Stewart, Pier Millan ..	92	81	173
R. McGuigan, Winnambool ..	93	77	170
R. Wharton, Manangatang ..	77	72	149

FALLOW COMPETITIONS, 1927.

The dry season had been unsuitable for the easy preparation of good fallows in this district, and in consequence the preparation of some of the fallows was very backward at the time of judging. In some that had been worked deeply the seed bed showed no signs of consolidation, but others that had been more carefully treated were in really excellent condition, although the moisture content was generally low.

Several of the fallows had received good rains from thunderstorms during October, and it was a matter of great regret to find that some that had received the heaviest falls had been allowed to remain unworked since then, and in consequence the benefit of the rain had been lost. Usually this was unavoidable owing to the teams being away on contract work, but nevertheless it was a pity that such a valuable opportunity should be lost.

One of the most frequent defects noticed among the fallows in the competition was the ridging due to the uneven setting of the implements. Where stumps are common the implements are often strained and bent, and it is impossible to keep them set perfectly, but generally a little more attention given to this point should result in a considerable improvement in the work done.

Manangatang Fallow Competition.

Eleven entries were judged in this competition. The soils vary from fairly heavy clay and grey limestone flats to sandy rises.

Mr. C. C. Cooper was placed first with 92 points, and Messrs. S. Thompson and W. Coghill equal second with 91 points.

Mr. C. C. Cooper's entry placed first consisted of a large limestone flat. Due to careful cultivation, the seed bed was even and well consolidated, and there were very few weeds present on the fallow.

This land had been rigid tyne cultivated partly in February and the remainder in July to 2 inches. It was again rigid tyned to 2 inches in July. It was next rigid tyned in August and September, and harrowed early in November.

Mr. S. Thompson's entry consisted of large sand rises with a small area of flat. This land had been ploughed 4 inches deep in July and August, and harrowed immediately. It was next combined 2½ inches in October. Points were lost for the ridging of the seed bed, and the flat being rather rough.

Mr. W. Coghill's fallow lost points for the seed bed being uneven. The mulch was rather deep in places, and on one portion of the entry there was a considerable quantity of old wheat stubble. The moisture content of this fallow was good, and very few weeds were present. The land had been ploughed 2½ inches in June and July, and harrowed in August and again harrowed in October and combined at the end of October.

DETAILS OF AWARDS—MANANGATANG FALLOW COMPETITION.

Competitor.		Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible points	.. ..	25	25	25	25	100
C. C. Cooper	.. ..	22	23	23	24	92
S. Thompson	.. ..	23	22	23	23	91
W. Coghill	.. ..	24	21	24	22	91
G. McCague	.. ..	20	21	24	21	86
R. Wharton	.. ..	20	20	22	21	83
T. P. O'Shanessy	.. ..	20	19	22	20	81
N. Langley	.. ..	20	19	19	20	78
W. Robertson	.. ..	20	17	22	18	77
C. P. Wohlers	.. ..	19	17	21	19	76
J. Hughes	.. ..	19	17	21	18	75
D. Ridley	.. ..	17	16	16	20	69

Pier Millan Fallow Competition.

The entry of Messrs. Oliver and Dickinson obtained first place in this competition with 89 points. This fallow consisted of fairly heavy red and grey flats with a small area of sand rises. The seed bed was well consolidated, but the mulch was a little deep in places. The land had been mouldboard ploughed to 3½ inches in February, spring-tooth cultivated at the end of July and again at the end of August, and sheeped since then.

Mr. G. Glowrey's entry was second with 88 points. Points were lost owing to irregular depth of cultivation. The mulch, although generally in good order, was rather fine in a few places.

Mr. A. Vanderfeen's fallow was third with 86 points. The moisture, though not quite as high as the first and second fallows, was good, especially on the sand rises. The cultivation was fairly regular, but on the flats the mulch was rather shallow. This fallow had been mouldboard ploughed 3 inches deep in March and harrowed in June, cross harrowed July, and spring-tooth cultivated in August, and again early in October. It was again harrowed at the end of October.

DETAILS OF AWARDS—PIER MILLAN FALLOW COMPETITION.

Competitor.		Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible points	.. ..	25	25	25	25	100
Oliver & Dickinson	.. ..	21	22	23	23	89
G. Glowrey	.. ..	22	22	23	21	88
A. Vanderfeen	.. ..	20	22	22	22	86
J. Crosbie	.. ..	15	20	24	19	78
S. C. Laurence	.. ..	15	19	23	20	77
R. E. Stewart	.. ..	15	19	22	20	76
G. P. Rohde	.. ..	14	17	21	18	70
E. Daniell	.. ..	18	16	16	16	66
V. Daniell	.. ..	14	10	8	12	44

Wemen, Liparoo, and Moss Tank Fallow Competition.

Seven entries were received in this competition. Mr. N. V. Pattinson was placed first with 86 points, Mr. C. S. Neyland second with 83, and Mr. A. Hume third with 77.

Mr. N. V. Pattinson's fallow consisted mainly of flats with a few small sand rises. The moisture content of the fallow was good, and weeds were very few. The seed-bed was well consolidated, but the cultivation was a little irregular in places. The land had been mouldboard ploughed 3 inches in May and June. It was harrowed early in August and spring-tooth cultivated at the end of August. The flats were again spring-toothed early in September, and the whole area spring-toothed in October. It was again spring-toothed in November.

Mr. C. S. Neyland's entry was mainly a large sand rise with a good dark flat. The moisture content was not as high as in the winning fallow, and a few more weeds were present. This fallow had been ploughed 3½ inches early in August and harrowed immediately. It was again harrowed in September, and the flats were spring-toothed in October and harrowed in November.

Mr. A. Hume's fallow had been scarified 2½ inches in June and harrowed immediately. It was again scarified and harrowed in August and harrowed early in October and again in November. The mulch on the flats was very shallow, and the moisture content here was low. Both the mulch and moisture on the sand rise were good.

DETAILS OF AWARDS—WEMEN, LIPAROO, AND MOSS TANK DISTRICT.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
N. V. Pattinson	22	22	22	20	86
C. S. Neyland	20	22	21	20	83
A. Hume	19	19	19	20	77
T. J. O'Loughlin	21	17	20	18	76
F. D. Taylor	19	17	21	18	75
A. E. Robertson	22	18	17	16	73
T. B. Collins	17	16	18	17	68

WARRACKNABEAL CROP AND FALLOW COMPETITION, 1927.

*Report by the Judge, J. Brake, B.Ag.Sc., Senior Inspector of
Agriculture.*

The season just past was remarkable for the irregular nature of the rainfall. Both in the Mallee and the Wimmera there were districts which experienced heavy rainstorms at the critical stage of growth of the wheat crops—rain which enabled the crops of those districts to finish and yield almost as well as usual.

Although Warracknabeal was not one of those fortunate districts, its record in the past has been such that a good average yield was expected; but the moisture stored up in the fallow was not equal to the task of making up for the long succession of dry months, and anything like normal yields were the exception rather than the rule.

A glance at the rainfall figures would appear to provide a justifiable excuse for the behaviour of those crops which did not yield up to expectations. The average yearly rainfall for the district is 1,509 points. In 1925 only 1,150 points fell, in 1926 the fall was 1,236, and in 1927 only 936 points. Let us go further! While it is agreed that the retention of a mulch is responsible for entrapping such moisture as is already present in the soil, there is no doubt that the spring rainfall is of immense benefit in assisting the crop to fill and generally finish well.

What happened this season? The average falls for September, October, and November were only 93, 80, and 45 points respectively, while the average falls for those months are 168, 136, and 110 points respectively.

It is apparent then that the soil, depleted of its reserves of moisture over a period of three years, and then deprived of these vital rains, was simply starved for moisture in circumstances that were beyond the control of the farmer.

The rates of seeding and manuring in the seven crops inspected averaged 82 lb. of seed and 109 lb. of superphosphate per acre, the lowest seeding being 65 lb. and the highest 90 lb., whilst the lowest and highest rates of manuring were 90 lb. and 124 lb. respectively.

In the light of official experimental work carried out at Longerenong and at Warracknabeal itself, 82 lb. of seed to the acre can be regarded as a satisfactory quantity to sow, but the rate of manuring practised is on the low side. The local manurial tests have shown $1\frac{1}{2}$ cwt. of super. to be the most profitable dressing.

On the whole the crops were free from weeds and disease, and were even in appearance.

There were three sections in the competition this year, namely, 100 acres of crop on fallow exhibited in 1926, 100 acres of crop (open), and 100 acres of fallow. In both crop sections entries were small, there being only four crops shown in the former and three in the latter. In the fallow section, however, the contest was keener, 21 fallows being entered. With the promise of a bountiful harvest a closely contested competition should result when the crops grown on those fallows come up for judging at the end of the present year.

In the 100 acres of crop on 1926 fallow, Mr. P. F. Lehmann carried off first place, although in respect to purity, weeds, and evenness there was room for improvement in his crop. As far as the maintenance of type is concerned, a few bags of each variety grown should be obtained for seed every year from a State farm or seed station, and multiplied for sowing on the bulk areas of the farm. A farmer is thus easily able to maintain a high standard of purity of type. Mr. Lehmann showed 60 acres of Federation and 40 acres of Free Gallipoli; the seed was dry pickled and sown at 87 lb., whilst the super. was sown at 124 lb. per acre.

Mr. C. Peterson's second prize crop of Wannon was very clean, even, and true to type, and gained 81 points.

In the competition for aggregate of fallow and crop on that fallow Mr. P. F. Lehmann won with 184 points. Mr. C. Peterson was second with 170, whilst Messrs. W. Bunge and S. J. King deadheaded for third place with 169 points.

Aggregate sections should be regarded as of more importance than a crop section or fallow section alone, because they tend to stress the need of care in the production of the crop right from the first turning over of the land, through the fallowing and cropping periods right up to harvest time.

In the 100 acres open section Mr. C. Peterson gained first place with a crop of Wannon, scoring a total of 92 points. Second place went to Mr. N. McIntyre with a crop of Huf's Imperial, which gave promise of a yield above the average, but was badly mixed and infested with barley, wild oats, and undergrowth.

A variety of fallows were presented for judging in that section, some being particularly good considering the dry year, whilst others were somewhat poor.

Three-fourths of the fallows shown were of a high standard. They varied in respect to only shades of differences in depths of mulch, the amount of moisture present, the number of weeds seen, and the evenness of the cultivation.

Mr. A. Parsons took first place with a fallow in good order, notwithstanding the few workings it had received, an indication of the greater relative importance of the time of working rather than the number of workings. The paddock was scarified $3\frac{1}{2}$ inches deep in March and again in July, worked with the combine in September, and harrowed in November.

Mr. A. E. Cook took second place with a very nice paddock of black and red soil. It was mouldboard ploughed in July, harrowed and sheeped; scarified in August, harrowed after rain, spring-toothed in October and twice harrowed.

Awards.

Name.	Apparent Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.	Total for 1926 Fallow.	Grand Total.
Possible Points ..	35	20	15	15	15	100	100	200

100 ACRES OF CROP ON 1926 FALLOW.

P. F. Lehmann	30	17	13	14	13	87	97	184
C. Peterson ..	20	19	14	14	14	81	89	170
W. Bunge ..	20	18	14	14	14	80	89	169
S. J. King ..	16	19	14	14	14	77	92	169

BEST 100 ACRES CROP—OPEN.

C. Peterson ..	31	19	14	14	14	92	..	..
N. McIntyre ..	25	16	11	14	13	79	..	..
J. A. Couzner ..	11	18	13	14	12	68	..	..

BEST 100 ACRES FALLOW.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
A. Parsons	23	24	24	24	95
A. E. Cook	23	24	24	23	94
J. H. Gove, No. 2 ..	23	23	24	23	93
P. and J. S. Schulz, No. 2 ..	22	24	24	22	92
J. A. Couzner, No. 2 ..	22	23	23	23	91
W. Bunge	23	22	23	23	91
P. and J. S. Schulz, No. 1 ..	22	22	24	22	90
G. J. Crerar, No. 1 ..	23	24	20	23	90
P. F. Lehmann	23	22	23	22	90
M. T. Brennan, No. 1 ..	23	23	22	22	90
J. H. Gove, No. 1 ..	22	22	24	21	89
A. Arnold	23	21	23	22	89
S. J. King	23	22	22	22	89
J. A. Couzner, No. 1 ..	22	22	22	22	88
J. A. Couzner, No. 3 ..	20	22	22	23	87
M. T. Brennan (east), No. 2 ..	22	22	21	22	87
G. J. Crerar, No. 2 ..	21	24	19	23	87
F. R. Kinghorn	21	21	21	22	85
J. W. Schultz	21	20	24	20	85
A. E. Nuske	22	20	21	21	84
C. Parsons	21	21	20	22	84

CROP AND FALLOW COMPETITIONS IN THE WESTERN MALLEE.

(WALPEUP, GALAH, AND BOINKA.)

By. J. Brake, B.Ag.Sc., Senior Inspector of Agriculture, and A. B. Hackwell, B.Ag.Sc., Science Field Officer.

The Walpeup Fallow and Crop Association functioned for the first time in 1927 under the secretaryship of that public-spirited and indefatigable worker, Mr. W. L. Vines.

The value of the competitions it has promoted was again illustrated by the very fine work exhibited. Crops were grown which yielded from 9 to 18 bushels per acre in a year most adverse to the growing of good wheat and when the farmers of many other districts had to content themselves with very much lower yields, and in some cases no yield at all.

It is possible that some parts of the district may have received opportune rains in the spring, but, even so, the crops raised under the general conditions and sparse rainfall of the year constitute a very real triumph for better farming methods.

It has been calculated that it should be possible to grow $3\frac{1}{2}$ bushels of wheat for every inch of rain that falls during the growing period of the crop. Experience shows that it is not easy to achieve this result, yet at Walpeup in the past year, with a rainfall of 536 points in the

growing period, and only 6½ inches from January to November, yields up to 19 bushels were obtained, representing over 3½ bushels of wheat for every inch of rain received between sowing time and harvest.

The Value of Manuring and Fallowing.

The wisdom of liberal manuring and good cultivation is now recognized to a greater or less degree by practically everybody growing wheat in our dry areas, but some illustrations seen this season are impressive and worthy of mention.

In this connexion the advocacy of fallowing on new ground often comes in for a deal of criticism, and it remains for a season similar to the one just past to demonstrate the influence of the additional cultivation on the yield. On new Mallee land (fallowed) yields up to several bags per acre were obtained, whilst nearly all crops sown on the burn or on imperfectly prepared fallow failed completely.

The results obtained on the plots at Walpeup were themselves an illustration of this, as this year's field carried its first crop and produced yields varying from 15 to 20 bushels per acre. The soil received the following preparation:—The mallee was burnt in the autumn of 1926, after which the field was mould-board-ploughed in June, 1926, and harrowed twice in July; it was spring-tooth-cultivated once in August, once in September, twice in October, once in January, once in February, once in early April, and twice in May. It was harrowed on the 1st of June, sown immediately with 60 lb. of seed and 90 lb. of 22 per cent. superphosphate per acre, and harrowed after the drill. Thus the total workings were one ploughing, four harrowings, and nine spring-toothings.

As far as older land is concerned, the cultivation trials at Carwarp again showed the superiority of the well-worked over the neglected soil. The plot ploughed in July and worked yielded about five times as much as the plot ploughed in July and neglected.

As our knowledge of wheat-growing in the Mallee advances, it becomes increasingly evident that the more thoroughly the soil is prepared year by year in a workmanlike manner, the sooner does the paddock become capable of producing consistently high-yielding crops. That is to say, good fallowing not only increases yields in the first year, but appears to have a definite beneficial effect in subsequent years.

Because of the big inconvenience caused by drift sand, some farmers adopt the practice of omitting the working of the hills during the fallowing period. This means that the soil, apart from being deprived of improvement due to the cultivation, becomes covered with barley grass and other objectionable weeds, the very thing that should be avoided, one might say, at all costs. The loss accruing from this practice was illustrated during the past year by Mr. C. Brown, of Underbool, in his competition paddock. Only a portion of the sand-hill in the paddock had been worked in a similar manner to the flats, the remainder being ploughed and left. On the occasion of the Farmers' Field Day at the Walpeup experimental plots, in November, Mr. Brown stated that the results were quite convincing; the neglected portion of the sand-hill had no wheat on it, whilst the worked portion carried quite a passable crop. Apart from the resulting reduction in yield, the adoption of a practice that allows a growth of barley grass and weeds to persist should be carefully avoided on account of the encouragement given by such practice to fungoid diseases, like take-all. As a matter of fact, it is probable that the day is not far distant when the most generally adopted

crop rotation in the Mallee will be one excluding grass land; a paddock out to grass is often called "resting," but actually is more often breeding take-all and footrots.

The necessity of catering for the deficiency of the important plant food, phosphorus, in our Victorian soils by applying ample quantities of superphosphate is now widely recognized, particularly amongst wheat-growers. Years of experimenting by the Department of Agriculture has given proof that on well prepared ground throughout the Mallee the most profitable amount to apply is about 90 lb. per acre. At the Walpeup plots the average results for the three years since the plots were commenced are:—

Manure.	Yield.	Value of Increase over No Manure (Wheat at 5s. per Bushel).	Net Profit due to Manure after deducting Cost of Manure at £5 12s. per Ton.
	bushels.	s. d.	s. d.
No Manure	15.7		
Superphosphate, 30 lb. per acre ..	18.9	16 0	14 6 per acre
" 60 " ..	20.7	25 0	22 0 "
" 90 " ..	22	31 6	27 0 "
" 120 " ..	22.5	34 0	28 0 "

These results bear out those obtained at Cowangie for over six years, at Carwarp for over eleven years, and at Manangatang for two years.

It will be noticed that even including the season just over, with its light rainfall, the comparatively heavy dressing of 120 lb. per acre has given a slightly better return than the 90 lb., so that the old fear of super-burning of the crop has once more been proved baseless.

Well nourished plants or animals, with plenty of food available, possess infinitely greater power of resisting disease than those inadequately fed. Therefore, it is not surprising to find that a liberal use of superphosphate assists the wheat crop materially in warding off disease. In the manurial trials at Walpeup last Field Day it was seen that the unmanured plot was five times as severely attacked with Flag Smut (Black Rust) as was the adjoining plot treated with 90 lb. of superphosphate per acre.

A similar thing has been noticed in other years in regard to Take-all, so that the man using adequate quantities of superphosphate can be satisfied that he is not only making best yields possible, but that he is also reducing the liability of disease to a minimum.

Walpeup Fallow Section.

BEST 100 ACRES.

In this section Mr. R. C. F. Gniel's exhibit was outstanding, and carried off first place. The soil was a very nice red sandy loam, and the preparation was almost faultless. The paddock was ploughed with the mouldboard in July, harrowed immediately, then harrowed again. It was spring-tooth-cultivated during the last week in August, twice in September, and twice in October.

Second place was gained by Mr. A. L. McGregor with his No. 1 exhibit, whilst third place went to Mr. John Black, of Galah.

Mr. McGregor's paddock was summer-fallowed with the Wimmera scarifier, and spring-toothed in February and March. It was ploughed

in July, and the flats were harrowed in August; the whole paddock was spring-toothed in October.

Mr. Black's fallow received less attention, being mould-board-ploughed in July, spring-toothed in August and again in September.

Most of the fallows were of good quality with, generally speaking, satisfactory mulches; some of them, however, had been allowed to grow barley grass and weeds.

WHOLE OF ENTRANTS' FALLOW.

Seven entries were submitted for the whole of fallow section, and there was a big variation in the acreage submitted.

Mr. Gniel won this section with an exhibit of 170 acres, which included his winning exhibit in the 100-acre section. Second place was divided between Mr. A. L. McGregor with 331 acres, and Mr. G. W. Wakefield with 500 acres, whilst Mr. G. Latta was a close fourth with 700 acres.

The high place gained by these large areas is evidence of the careful preparation being given to every acre of fallow by the bigger farmers. The old practice of "grabbing" at more land than can be conveniently handled with the capital available, with the consequent "slumming" of cultivation on the home block, would appear to be dying out.

Awards.

WALPEUP—100 ACRES OF FALLOW FOR 1928 CROP.

Name.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
R. C. F. Gniel	24	24	24	24	96
R. L. McGregor, No. 1 ..	23	23	23	22	91
John Black	23	22	22	23	90
T. Bell	22	22	22	22	88
G. W. Patterson	22	22	21	22	87
O. Williams	22	22	21	21	86
J. Holst.	23	20	20	21	84
J. O'Shannesy	21	23	18	20	82
A. V. Westcott	21	24	17	20	82
R. L. McGregor, No. 2 ..	20	22	19	19	80

WALPEUP—ALL OF FALLOW.

Name.	Area.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	..	25	25	25	25	100
	acres.					
R. C. F. Gniel	170	24	24	24	24	96
R. L. McGregor	331	22	23	21	21	87
G. W. Wakefield	500	22	22	22	21	87
G. Latta, sen.	700	22	21	22	20	85
J. O'Shannesy	160	21	23	19	20	83
A. V. Westcott	156	21	24	17	20	82
M. G. Patterson	160	21	21	17	20	79

Walpeup Crop Sections.

In the crop sections, of which there were two—100 acres crop on 1926 fallow, and 100 acres crop on any fallow—some surprisingly good crops were shown, compared with crops in other Mallee districts.

100 ACRES ON 1926 FALLOW.

In this section first place was won by Mr. John Black with Sepoy and Currawa; both varieties were sown in May at the rate of 65 lb. per acre, with 80 lb. superphosphate. The Sepoy was pickled with formalin, whilst the Currawa was dry-pickled. Practically no strange heads were to be found throughout the exhibit, and in all respects there was full justification for the crop coming out on top in a competition.

Mr. A. L. McGregor's crop of Sepoy, sown on last year's winning fallow, took second place. The seed had been dry-pickled, and was sown in early June at the rate of 60 lb. per acre, with 90 lb. of superphosphate.

The aggregate of points awarded for fallow in 1926 and for the crop on the fallow in 1927 was thus carried off by Mr. A. L. McGregor with a total of 168 points out of 200; Mr. John Black was second with 166, and Mr. N. Vallance third with 163.

In the other crop section—100 acres crop on fallowed land—Mr. A. L. McGregor's No. 1 crop of Currawa was first with 87 points. This was a fine, even, well sown crop, beating his Sepoy, which finished second in the crop on fallow section. The seed had been dry-pickled, and was sown towards the end of May with 65 lb. seed and 90 lb. superphosphate. Points were lost on the score of disease, as some Ball Smut was seen; other diseases were rare.

Awards.

WALPEUP.—V.F.U.—100 ACRES CROP ON FALLOW JUDGED IN 1926.

Name.	Variety.	Apparent Yield.	Purity.	Absence of Weeds.	Absence of Diseases.	Evenness.	Total.	Fallow Total, 1926.	Grand Total.
Possible Points	.. .. .	35	20	15	15	15	100	100	200
John Black	.. Sepoy, Currawa	25	19	13	14	14	85	81	166
A. L. McGregor	.. Sepoy	25	19	13	13	14	84	84	168
N. Vallance	.. Sepoy, Nizam	23	18	11	14	14	80	83	163
G. Patterson	.. Joffre, Currawa	22	19	12	13	14	80	77	157
J. Holst	.. Currawa, Rancee, Sepoy, Free Gallipoli	23	18	13	13	13	80	82	162
M. G. Patterson	.. Joffre	20	19	12	14	14	79	79	158
A. Lawrey	.. Yandilla King, Currawa	18	19	13	13	13	76	78	154
J. J. R. Gillespie	.. Sepoy, Currawa	17	19	11	12	12	71	80	151
O. Williams	.. Mac's White, Joffre	12	19	12	13	12	68	82	150
J. K. Glen	.. .. .	10	17	11	13	11	62	80	142

Awards.—continued.

Name.	Variety.	Apparent Yield.	Purity.	Absence of—		Evenness.	Total.
				Weeds.	Diseases.		
Possible Points		35	20	15	15	15	100

WALPEUP—100 ACRES CROP ON FALLOWED LAND.

A. L. McGregor, No. 1	Currawa ..	27	19	14	12	15	87
A. L. McGregor, No. 2	Sepoy ..	25	19	13	13	14	84
J. O'Shannesy ..	Mogul, Currawa ..	25	17	12	13	14	81
J. H. Holst ..	Currawa, Rancee, Sepoy, Free Gallipoli	23	18	13	13	13	80
G. Latta, sen. ..	Rajah, Rancee, Currawa, Joffre	22	18	13	14	12	79
A. D. McIntosh ..	Currawa, Rancee ..	20	17	12	14	13	76
A. J. Lawrey ..	Yandilla King, Currawa	18	19	13	13	13	76
N. J. Woodall ..	Mac's White ..	17	19	12	12	12	72
O. Williams ..	Mac's White, Joffre	12	19	12	13	12	68

GALAH—100 ACRES ON FALLOW JUDGED IN 1926.

John Black ..	Sepoy, Currawa ..	25	19	13	14	14	85
J. Holst ..	Currawa, Rancee, Sepoy, Free Gallipoli	23	18	13	13	13	80
A. E. Kincaid ..	.. ..	23	17	13	13	13	79
J. J. Gillespie ..	Sepoy, Currawa ..	17	19	11	12	12	71
H. Addems ..	Currawa ..	15	18	10	12	14	69

Boinka.**AGGREGATE POINTS FOR FALLOW, 1926, AND CROP GROWN ON THAT FALLOW, 1927.**

Name.	Variety.	Apparent Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total for Crop, 1927.	Total for Fallow, 1926.	Grand Total, Crop and Fallow.
Possible Points	.. .. .	35	20	15	15	15	100	100	200
S. D. Kinnersley ..	Currawa, Yandilla King, Rajah	30	18	12	13	13	86	83	169
E. H. Jones ..	Currawa, Free Gallipoli	29	18	12	12	12	83	75	158
J. L. Morrison ..	Rajah, Currawa ..	20	18	10	13	11	72	77	149
C. Bond ..	Currawa ..	16	17	10	12	10	65	79	144
J. A. Cresp ..	Currawa, Penny, Rancee, Sepoy, Mac's White	18	17	9	12	9	65	72	137

It is of interest to note that Mr. S. D. Kinnersley's winning crop was grown on last year's winning fallow. The wheat had been dry-pickled with copper powder, and sown about the last week in May with 55 lb. seed and 70 lb. superphosphate per acre. The crop was very even, and the drilling excellent. Points were lost through the presence of occasional strangers and barley, a few patches of mustard, and a scattering of wild oats, also odd dead heads and a little flag and loose smut.

The seed of Mr. E. H. Jones' crop had also been pickled with dry copper powder; it was sown during the third week in May with 62 lb. seed and 86 lb. superphosphate per acre. This was a fairly even crop; a few strangers were present, and points were also lost on account of occasional patches of mustard and wild oats, and a fair number of dead heads and a little loose smut.

FALLOW 1927—NOT LESS THAN 100 ACRES.

Name.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
E. H. Jones	25	24	23	23	95
J. L. Morrison	24	23	24	23	94
S. D. Kinnersley, No. 2	23	23	24	22	92
S. D. Kinnersley, No. 1	21	23	21	23	88
C. Bond	23	22	21	20	86
A. B. Carter, No. 2	21	21	23	19	84
J. A. Cresp	21	22	22	19	84
A. B. Carter, No. 1	19	19	18	19	75
I. A. Hampel	19	19	18	18	74

Mr. E. H. Jones's winning fallow had been summer-fallowed with the scarifier at the end of February, scarified and harrowed in July, and scarified again in August and in September. Its moisture content (considering the dry year) was excellent; the mulch was in nice condition and of good and fairly regular depth. The seed-bed was fairly well consolidated and level; occasional young mustard plants and "paddies" were present.

Mr. J. L. Morrison's fallow had been ploughed with the mould-board early in August, except for a few acres which were skim-ploughed; then the whole was scarified at the end of September, harrowed in mid-October and again early in November. The depth of working had evidently been very even, resulting in a nice level seed-bed, with good consolidation; the moisture content was also very good. The mulch was of nice tilth and of suitable depth, except on that portion which had been skim-ploughed, in which case the mulch was inclined to be a bit shallow.

Mr. S. D. Kinnersley's No. 2 entry was slightly lower in moisture content than were the entries of Messrs. Morrison and Jones. The mulch was in nice condition, but inclined to be a bit deep. This fallow lost a point on the consolidation of its seed-bed, which, however, was fairly level. This paddock had been ploughed at the end of July, harrowed, then spring-toothed early in September and again in October.

JEPARIT CROP AND FALLOW COMPETITION.

By A. B. Hackwell, B.Ag.Sc.

The Crop and Fallow Competition held in the Jeparit District is one of the largest in the State. It is a matter for congratulation that in such an adverse season as was experienced last year 78 entries should have been received—43 for crops and 35 for fallows. Nine additional entries were withdrawn through crop failure.

The rainfall records for Jeparit show that during the past season less rain was received than in 1914, though the distribution was better. The total fall of $9\frac{1}{4}$ inches was 5 inches below the average.

RAINFALL RECORDS—JEPARIT.

	1927.	1914.	Twenty-nine Years' Average.
January	13	68	48
February	43	94	101
March	37	123	91
April	..	105	79
May	147	78	186
June	67	44	179
July	182	70	147
August	189	19	156
September	99	10	187
October	41	2	128
November	48	123	96
December	110	286	97
Total Points	976	1,022	1,495

The showers in October helped the parched crops to fill out satisfactorily. The rainfall within the judging zone was unevenly distributed, and possibly an extra shower or two helped the crops at Tullyvea and Tarranyurk.

Crop Sections—Comments and Awards.

Considering the season, it is remarkable that the crops turned out so well—a result reflecting credit on the farming methods in practice. Some exceedingly good crops were inspected, but many were patchy, especially on the heavier soils. The severity of the season was particularly evident on those flats and hollows which, in a normal year, give the best yields.

The popularity of Free Gallipoli was an outstanding feature of the competition, as evidenced by the fact of the 43 crops exhibited no fewer than 28 consisted wholly or in part of this variety.

In some paddocks the Free Gallipoli was noticeably tipped. This was due probably to the hot winds scorching the tender head as it emerged from the sheath, rather than the result of the frosts. The amount of tipping varied considerably—in some entries it was general throughout, while others contained many untipped patches, possibly due to some soil peculiarity, which slightly delayed flowering until after the hot winds.

Three of the best crops inspected displayed no sign of tipping. It was said, however, that these three entries received a little extra rain,

causing the crop to be slightly later and likewise missing the effect of the hot winds. A similar effect was observed in the Pickling Trials at the recent Longerenong Field Day. Two plots of the same variety were growing side by side. One, badly tipped, was a control plot that had been sown without being pickled; the other, which had been pickled with bluestone, showed no sign of tipping. This pickle is known to retard the growth, and the emergence of the young head was delayed and so missed the scorching winds.

Good filling-out was a noticeable feature even in the tipped heads of Free Gallipoli, in which many instances of "three grains across" were seen.

The rate of seeding used by competitors varied considerably, many preferring the heavy sowing of 90 lb. per acre. This is 10 lb. to 15 lb. higher than the amount that Departmental tests have shown to be most profitable for the conditions.

There is every justification, however, for increasing the rates of seeding when conditions suggest that a good germination is not to be expected, such as on very stiff soil, or on fallow with a fair amount of rubbish, and also when the sowing is a late one.

As to the best time of sowing, mention may be made of evidence obtained at the Experimental Plots, Salisbury, where for the past six years early sowing—late May—early June—resulted in an average increase of 3 bushels per acre over sowing a month later.

Diversified opinion exists around Jeparit as to what is the most payable quantity of super. to apply. Many farmers favour liberal dressings, a practice confirmed by Departmental investigation over many years. From 1 cwt. to 1½ cwt. per acre on fringe country, and 90 lb. on light mallee soil have furnished the most profitable returns.

SECTION 1.—BEST 50 ACRES OF CROP GROWN ON FALLOW, JUDGED 1926 AS HEAVY LAND.

In this section six entries were received. The adverse season was reflected in this heavy-laden section more severely than in the others, resulting in uneven crops, with numerous poorish patches. Inspection revealed, however, that these crops had pulled through better than had been expected.

Competitor.	Variety.	Appar- ent Yield.	True- ness to Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Possible Points ..	..	35	20	15	15	15	100
L. R. Rodda ..	Free Gallipoli ..	35	19	14	14	12	94
A. S. Rodda ..	Free Gallipoli ..	35	19	13	14	11	92
W. J. Hand* ..	Penny ..	34	17	14	14	12	91
W. G. Rodda ..	Free Gallipoli ..	33	19	14	14	11	91
H. A. Menzel ..	Free Gallipoli ..	31	18	13	12	11	85
A. T. Haousler ..	Ranee and Federa- tion	25	19	14	13	12	83

* This crop was grown on fallow exhibited by O. A. Schultz.

NOTE.—The points allotted for yield do not necessarily indicate the estimated yield in bushels per acre.

Mr. L. R. Rodda's entry of Free Gallipoli secured first place with a total of 94 points. It had been grown on fallow which gained first prize in last year's competition. It was clean, relatively free from strangers and disease, but somewhat uneven and was tipped in places. The seed had been dry pickled and sown at 90 lb. per acre, with 120 lb. super., during the second week of June. The paddock was summer-fallowed in March with a scarifier to 3 inches, scarified again in early August, cross-scarified September, scarified October, spring-toothed end of October, harrowed early November, spring-toothed mid-May, and harrowed three days after sowing.

Mr. A. S. Rodda's crop of Free Gallipoli came a close second, losing extra points owing to the presence of weeds and unevenness. The paddock had been ploughed with the mould-board in early July to 3 inches, harrowed immediately, scarified early August, harrowed September, "combined" early October, harrowed mid-October, combined mid-May, sown mid-June, and harrowed. Seed, 90 lb.; formalin pickled; super., 1 cwt. per acre.

Mr. W. J. Hand's crop of Penny, grown on fallow, exhibited by O. A. Schultz, was of nice even height, relatively free from disease, but somewhat thin. It was penalized for the presence of barley and for several wide misses in the sowing. The seed had been pickled with formalin, sown 70 lb. per acre, with super. 90 lb., about mid-July, on land ploughed with the mouldboard at the end of June to 3½ inches, harrowed early July, spring-toothed early August, harrowed mid-August, spring-toothed early October, cultipacked mid-October, "combined" early June and harrowed across after sowing.

Mr. W. G. Rodda's entry of Free Gallipoli shared third place, being clean, fairly pure, and with little disease. It was, however, very patchy and uneven, and badly tipped in parts.

The land was scarified early in March, scarified and harrowed mid-July and again mid-August, spring-toothed end of September, harrowed mid-May, spring-toothed end of May, and sown with the "combine" during the first week of June with about 97 lb. of dry pickled seed and 1 cwt. super. per acre.

SECTION 2.—BEST 50 ACRES OF CROP GROWN ON FALLOW JUDGED 1926 AS MEDIUM LAND.

Fifteen entries were inspected in this section. First place is awarded to Mr. A. T. Haeusler, with 92½ points; second place to Mr. C. V. Leyonhjelm, 90 points; and a close third to Mr. C. E. Krüger, 89 points.

Mr. A. T. Haeusler's winning crop of Free Gallipoli promised a satisfactory yield. It was well grown, fairly thick and even, except for an odd "drift" patch. It contained, however, occasional strangers and dead heads, a little flag smut, and a few patches of mustard. The seed had been dry pickled and sown with the "combine" at 75 lb. per acre, with super. 95 lb., during the third week of June on last year's second prize fallow prepared as follows:—Scarified April, and again end of June, then harrowed, scarified and harrowed early August,

spring-toothed September, spring-toothed and harrowed October, spring-toothed end of May with light harrows behind, harrowed week after sowing.

In Mr. C. V. Leyonhjelm's entry, the Free Gallipoli was very thick, short, of even height, but badly tipped and showing an occasional stranger, a little disease, and a few wild oats. The Federation was even, clean, tipped only in patches, but otherwise very well headed. Seed, 98 lb., dry pickled, with super. 125 lb. per acre. Sown first week June on fallow, ploughed with mouldboard end May to 3½ inches, spring-toothed July (deep), part scarified August and part spring-toothed, whole spring-toothed end October, "combined" third week May, and harrowed a week afterwards.

In C. E. Krüger's entry, many acres of thick, tall, well-headed, even crop were seen, particularly in the area sown with Free Gallipoli. The crop, as a whole, however, was not uniform throughout, and contained several poor patches thick with wild oats; a few foreign heads were also present. The Rajah was fairly even, tall in patches, well-headed, but very impure, and containing, in addition, a fair amount of barley, a sprinkling of wild oats and a little loose smut. The cultivation carried out by Mr. Krüger was as follows:—Disc ploughed to 3½ inches June, harrowed August, part spring-toothed twice September and part once, spring-toothed early October, "combined" third week May, sown mid-June, harrowed twice after. Seed, 75 lb., dry pickled; super., 130 lb. per acre.

Competitor.	Variety.	Appar- ent Yield.	True- ness to Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Possible Points ..	..	35	20	15	15	15	100
A. T. Haessler ..	Free Gallipoli ..	35	18½	13	13	13	92½
C. V. Leyonhjelm ..	Free Gallipoli and Federation	31	18½	14½	14	12	90
C. E. Krüger ..	Free Gallipoli and Rajah	32	17	13	14	13	89
W. J. Hand* ..	Free Gallipoli ..	29	18	14	14	12	87
L. C. Ferris ..	Free Gallipoli ..	27	19	13	14	12	85
R. J. Woodford ..	Free Gallipoli ..	30	18	12	13	11	84
O. G. B. Heinrich ..	Federation ..	28	18	14	9	12	81
J. Morcom ..	Free Gallipoli ..	25	18	14	13	11	81
T. G. Marshall ..	Federation ..	27	16	12	12	12	79
W. J. Hand ..	Free Gallipoli and Penny	24	17½	14	11	11	77½
M. G. Porker ..	Ranco ..	19	19	13	14	11	76
E. J. Crittenden ..	Free Gallipoli, Nizam, and Federation	23	19	9	13	10	74
C. R. McCallum ..	Nizam and Federa- tion	12	19½	14½	14	9	69
G. A. Cross ..	Federation ..	12	18	14	12	10	66
C. F. Schulze ..	Free Gallipoli and Federation	12	19	13	13	9	66

* This crop was grown on fallow exhibited by O. A. Schultz.

SECTION 3.—BEST 50 ACRES OF CROP GROWN ON FALLOW JUDGED 1926
AS LIGHT LAND.

Of the eight entries received, first place is awarded to Mr. A. P. Miller for his fine crop of Free Gallipoli, which was expected to give the heaviest yield of the crops entered in this section. It was relatively even and had headed exceedingly well without being tipped. Mustard and wild oats were present throughout, and points were also lost on account of a little flag smut, loose smut, a few dead heads and an occasional stranger. This winning crop was sown on last year's second prize fallow, prepared as follows:—Lightly sundercut March, ploughed early July 2½ inches, harrowed end July, spring-toothed and harrowed August, September, and again in May, "combined" in end of June with 75 lb. of dry-pickled seed and 90 lb. super. per acre. Several small bare patches were noticed in the crop, and as there was apparently no disease present, it was thought that the trouble may have been due to salt. A chemical analysis of the soil from a typical bare patch showed that this was not the case. Another point of interest in this crop was that, through overlapping, a strip had been doubly sown. At the judging it was slightly taller and better headed than the rest, and could be picked out right down the line of sowing; likewise with the double sowing down the headlands. It is probable that the extra manure was responsible for the better growth.

Competitor.	Variety.	Appar- ent Yield.	True- ness to Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Possible Points ..	..	35	20	15	15	15	100
A. P. Miller ..	Free Gallipoli ..	35	19	11	12	14	91
W. J. Hand ..	Ranee ..	30	17	14	13	14	88
W. T. H. Porker ..	Free Gallipoli, Ranee and Nizam	29	18	14	13	13	87
G. T. Werner ..	Free Gallipoli ..	31	18	12½	12	12	85½
A. E. McIntosh ..	Nizam ..	22	18	14	14	12	80
J. Dalrymple ..	Free Gallipoli ..	18	18	13	12	11	72
C. R. McCallum ..	Free Gallipoli ..	14	18½	11	14	10	67½
G. A. Cross ..	Federation ..	12	18	14	11	9	64

The crop of Ranee exhibited by Mr. W. J. Hand was awarded second place, with 88 points. It was fairly even, nicely headed, and practically free from weeds. Points were lost, however, owing to presence of foreign heads and barley, also to an odd dead head and a little loose smut. Cultivation:—Ploughed early August, harrowed September, spring-toothed early October, "combined" mid-June with covering harrows, sown beginning July and cross-harrowed. Seed, 70 lb., dry pickled; super., 85 lb. per acre.

Mr. W. T. H. Porker's entry, which was awarded third place, contained three varieties, the evenness of which was only fair; at one end of the paddock the crop was dense, tallish, and well headed, but it gradually faded away towards the homestead end. Ranee was expected to yield heaviest of the three varieties sown; the Free Gallipoli was badly tipped and contained a fair amount of barley, while the Nizam was short, thick, and flaggy. An occasional dead head and a little

loose smut were seen throughout. The crop was grown on winter-fallowed land given the following preparation:—Ploughed mouldboard end June 2½ inches, harrowed immediately, spring-toothed early August, harrowed end August, spring-toothed and harrowed September, harrowed early October and again late May, scarified early June, sown with "combine" mid-July and harrowed across. Seed, 80 lb., dry pickled; super., 95 lb. per acre.

SECTION 7.—BEST 100 ACRES OF CROP (OPEN).

Some splendid crops were seen among the entries inspected. First place was awarded to Mr. Albert Bell for a remarkably good crop of Free Gallipoli which promised a heavy yield, being tall, dense, very well headed, and fairly even throughout, with no sign of tipping. The crop at the time of judging was slightly on the green side. It showed a little barley and flag smut, but was relatively free from weeds. The land on which this heavy crop was grown was mostly dark, heavy, clay loam (that could be worked down very fine), with patches of heavy red clay loam interspersed. Seven workings were given, as follows:—Summer fallowed in March with the sundercut, scarified end July, harrowed immediately, spring-toothed early September, early October, and mid-May, before sowing second week June with 70 lb. dry-pickled seed and 95 lb. super. per acre.

Competitor.	Variety.	Appar- ent Yield.	True- ness to Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Possible Points ..	..	35	20	15	15	15	100
Albert Bell ..	Free Gallipoli ..	35	18	14	14	13	94
J. Morcom ..	Free Gallipoli ..	33	18	13	14	14	92
A. S. Rodda ..	Penny ..	31	17	11	14	13	86
C. E. Krüger ..	Free Gallipoli, Gra- ham, and Rajah ..	29	17½	13	14	11	84½
L. R. Rodda ..	Penny and Free Gallipoli ..	31	17½	13	11	12	84½
R. J. Woodford ..	Free Gallipoli ..	31	18	12	13	10	84
C. P. Preston ..	Free Gallipoli ..	28	19	13	12	11	83

Mr. J. Morcom's entry, also of Free Gallipoli, was the most even crop in the section and was well worthy of second place. It was short, heady, very slightly tipped, and fine in the straw. Some barley, wild oats, and a few strangers were present. The workings were:—Ploughed mouldboard 3 inches July, harrowed, spring-toothed end of July and end of August, "combined" mid-May, sown mid-June with 85 lb. seed per acre, and harrowed one week after. A heavy dressing of 165 lb. of super. was given. No sign of "burning off" was noticed.

Mr. A. S. Rodda's crop of Penny, which gained third place, was fairly even, very well headed without excess flag, but was docked on account of mustard and barley being general throughout. In addition, it showed a few strangers and dead heads. It was sown on summer fallow, prepared with the scarifier in mid-March, scarified again last

week in June, "combined" end of July, harrowed August, "combined" early October, then harrowed and left till the end of May, when it was again "combined"; sown mid-June with 90 lb. formalin-pickled seed and 1 cwt. super. per acre, and was then harrowed.

Of the three varieties exhibited in Mr. C. E. Krüger's entry, Graham occupied about 70 acres, 20 of which were exceptionally good, tall, heavy and well-headed. This portion was one of the best areas of crop seen during judging. The remainder, however, gradually faded away, and, taken right through, this entry was exceedingly uneven.

SECTION 8.—BEST 100 ACRES OF CROP GROWN ON LIGHT LAND.

Seven farmers took advantage of this newly-formed section, and some creditable crops were exhibited, particularly Mr. A. A. Zanker's entry of Graham and Penny, which gained first place and stood out prominently, with 93 points. This crop was fed off, a point which may partly account for its success. It was sown during the third week of May after a fall of 40 points of rain. Dry-pickled seed, at the rate of 60 lb. per acre, and 90 lb. of super. per acre were used. Sheep and cattle were run on the crop until the end of August. The Graham turned out to be very even, of nice height, clean, fairly true to type, but slightly tipped. Dead heads and a little barley were present. The area had been disc-ploughed at the end of July, harrowed August, spring-toothed September and October, "combined" in, then harrowed. The Penny was very clean, well filled, fairly even, and not tipped. A number of dead heads was observed, also a little flag smut and loose smut. It had been sown on land that was disc-ploughed to 3 inches early July, harrowed end of August, scarified beginning September, spring-toothed October, harrowed and spring-toothed November, spring-toothed shallowly in December, "combined" in and then harrowed.

Competitor.	Variety.	Appar- ent Yield.	True- ness to Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Possible Points ..	..	35	20	15	15	15	100
A. A. Zanker ..	Graham and Penny	34	19	14	12	14	93
F. Lennecke ..	Free Gallipoli and Federation	35	16	13	9	14	87
Aver Bell ..	Gluyas and Rajah	33	14	13	13	13	86
R. T. McKenzie ..	Penny ..	24	18	13	14	12	81
W. J. Hounsell ..	Free Gallipoli, Indian X, Fed- eration	27	14	13	9	11	74
Schmidt Bros. ..	Graham and Rajah	25	15	11	13	10	74
G. T. Werner ..	Free Gallipoli, &c.	A large portion of this entry had been cut for hay					

Mr. F. Lennecke was awarded second place for his entry of Free Gallipoli and Federation, which were both tallish, heady, and well filled and promised to yield satisfactorily. The crop, however was mixed, and several points were also lost on account of disease; ball smut was noticeable, and dead heads and flag smut were prevalent. The area had been winter-fallowed, spring-toothed, harrowed twice, drilled at the end of May, then harrowed. Seed, 60 lb., pickled with formalin; super., 90 lb. per acre.

Mr. Aver Bell came a close third with Gluyas and Rajah, the former being a nice piece of crop, tall, dense, well headed, and fairly clean except that barley was consistently common. Strangers and flag smut were also noticed. The Rajah was not so good, being patchy, thinner, and not as well headed. It was badly mixed and contained barley and loose smut.

The cultivation was, viz.:—Sundercut July, harrowed immediately, spring-toothed twice during spring and again mid-May, "combined" in mid-June. The rate of seeding was:—Gluyas 90 lb., Rajah 70-75 lb. per acre, dry pickled; super., 90 lb. per acre.

Fallow Sections—Comments and Awards.

At the time of inspection the fallows around Jeparit were, on the whole, in very fair condition. Most of the competitors had taken full advantage of the few opportunities presented for cultivation, and the moisture content in many cases exceeded expectation.

The importance and value of early well-worked fallow is fully realized in the district. Of the total 35 entries, no fewer than 27 had been summer-fallowed.

SECTION 4.—BEST 50 ACRES OF FALLOW ON HEAVY LAND.

Of the nine entries received, Mr. L. R. Rodda was awarded first place, with 95 points. The area had been summer-fallowed with the scarifier in mid-March, scarified again in July and in August, spring-toothed and harrowed in October, and harrowed again early November.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
L. R. Rodda	23	24	25	23	95
W. G. Rodda	23	23	24	23	93
W. J. Hand	22	23	24	22	91
A. S. Rodda	23	23	23	22	91
A. Twartz	24	23	23	21	91
F. H. Schulze	22	22	23	22	89
Albert Bell	21	23	22	22	88
H. A. Menzel	22	23	23	20	88
N. S. Robson	22	22	22	20	86

Second place was awarded to Mr. W. G. Rodda, whose entry lost an extra point for a somewhat shallow mulch and for the presence of a little mustard and barley grass; otherwise, it was on a par with the winning fallow. The area had been a feed paddock, scarified up in mid-March, again early May to 2 inches and again early July, harrowed, spring-toothed late August, and harrowed beginning November.

SECTION 5.—BEST 50 ACRES OF FALLOW ON MEDIUM LAND.

Competition was exceedingly keen in this section with its sixteen entries. Mr. G. A. Cross received first place for a splendid piece of summer fallow, mostly reddish sandy loam, which was broken up with the skim plough at the end of March, ploughed with the mouldboard late in July, "combined" mid-September and again mid-October.

The mulch was in good order, of nice depth, overlying a solid level bed, indicating good workmanship. The moisture content was excellent.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
G. A. Cross	25	24	24	24	97
R. J. Woodford	24	23	25	24	96
L. C. Ferris	23	24	24	23	94
J. A. Dalrymple	23	23	24	23	93
A. T. Haessler	23	23	24	23	93
A. Twartz	23	23	24	23	93
A. B. McCallum	24	23	24	21	92
C. E. Krüger	21	23	24	23	91
J. Morcom	23	23	23	22	91
O. G. B. Heinreich	21	24	23	22	90
T. G. Marshall	21	23	24	22	90
G. T. Werner	22	23	23	22	90
N. S. Robson	22	22	24	20	88
Schmidt Bros.	21	23	22	21	87
W. J. Harrop	21	23	20	20	84
C. V. Leyonhjelm	20	23	20	20	83

Mr. R. J. Woodford also exhibited a very creditable fallow and was awarded second place, with 96 points. In this case the land was given light workings as follows:—Sundercut end of March, harrowed early April, scarified third week May, harrowed, “combined” mid-July, harrowed, “combined” end of September, and lightly “combined” beginning of November. The mulch, though in good condition, was inclined to be shallow in parts, and the moisture content was considered not quite up to that of the winning fallow, nor was the seed-bed as level.

Mr. L. C. Ferris had made a good job of a very uneven paddock, and received third place, with 94 points. The area was summer-fallowed with the scarifier in mid-March, scarified again in mid-July, “combined” in August, September, October, and early November.

SECTION 6.—BEST 50 ACRES OF FALLOW ON LIGHT LAND.

Several of the ten fallows entered in this section were in very fair condition, resulting in a close contest.

Mr. R. E. Schneider's entry obtained first place, with 96 points. Careful cultivation had furnished a level seed-bed, overlaid by a good depth of mulch. The high percentage of moisture conserved was very gratifying, but points were lost because of the presence of a little barley grass. The land had been scarified during the last week of July to 3 inches, harrowed August, and scarified again in October.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
R. E. Schneider	25	24	23	24	96
W. T. H. Parker	23	24	24	24	95
A. T. Haessler	25	23	23	23	94
W. J. Hand	22	23	24	24	93
C. R. McCallum	23	23	25	22	93
O. and W. Pipkorn	24	23	23	22	92
J. A. Dalrymple	20	23	25	23	91
Aver Bell	21	23	23	23	90
L. W. Milne	21	22	24	21	88
A. E. McIntosh	20	22	23	22	87

Compared with the winning fallow, a lack of moisture was apparent in Mr. W. T. H. Parker's entry, which otherwise was in good order, and secured second place. It had been prepared with the spring-tooth at the end of March, scarified August, spring-toothed September, then scarified, with light harrows behind, at the end of October.

Mr. A. T. Haeusler's fallow gained third place. There was a splendid moisture content, although the mulch in parts was of uneven depth, the consolidation a little irregular; and points were also lost as young "paddies" were present. The cultivation it received was:—Ploughed mouldboard mid-July 3-3½ inches, harrowed twice in August, scarified early September, harrowed again third week October.

WILLAURA CROP COMPETITION.

Report of the Judge, P. Ryan, B.Ag.Sc., Inspector of Agriculture.

Willaura was one of the few wheat districts of the State which enjoyed a favorable season, and the crops generally gave promise of satisfactory yields. It was disappointing, therefore, to find so few entries in the crop competition. Apparently many farmers had come to the conclusion that they would not win, and did not bother to enter. This spirit compares unfavorably with the attitude of the wheat-growers in the Mallee, where, in spite of one of the driest seasons on record, the entries in the competitions have been well maintained. It should be emphasized that the winning of the prize should be a very minor consideration, and that if the competition is allowed to degenerate into a mere struggle of this sort it will lose most of its value. These competitions, providing as they do an opportunity for an annual survey of the district crops, have been the means of raising keen discussions on the methods used, and have proved of great general value in other districts in helping to determine the most effective means of increasing the wheat yield.

With the rise in land values in this district grazing has not proved sufficiently remunerative, and cultivation has to be resorted to if an adequate return on the capital invested is to be obtained. On account of its higher rainfall, Willaura presents to its wheatgrowers somewhat different problems from those which confront growers in the wheat belt proper, and it must be said that there appear to be wide divergencies of opinions on important points. For example, on the question of fallowing, there are three schools of thought in the Willaura district. There are those who do not consider fallowing is necessary, and do not plough their land until shortly before seeding time. Then there are those who break their fallows in July or August, and give them no further cultivation, relying on sheep to keep them in order till seeding time. Finally there is the increasing body of growers who plough their fallows early and keep them well cultivated throughout the spring and summer.

While carefully conducted field tests are the best means of solving these problems, the crop competitions, if entered into in proper spirit, should prove of valuable assistance. Indeed, reviewing the results of these competitions since they were commenced at Willaura, some three years ago, we find that the best results invariably have been obtained by those who ploughed their fallows early, worked them thoroughly, but took care not to bring their soil to too fine a tilth.

The competition crops were nearly all Federation or Free Gallipoli. Turvey, which a few years ago was almost the standard wheat of the district, is apparently passing out of favour, as it was not represented in the entries. In the choice of a suitable variety growers have the results of the departmental plots conducted on Mr. J. Shalders's farm to guide them. The average results for the past three years have been as follow:—

Free Gallipoli	..	..	..	..	28.7	bushels
Federation	..	..	..	..	28.1	"
Nizam	..	..	..	..	27.5	"
Yandilla King	..	..	..	..	27.3	"
Major	..	..	..	..	26.1	"
Turvey	..	..	..	..	24.9	"

Ghurka has been tested in these plots only for the last two years, but has given the highest yield on each occasion.

Most of the crops inspected were fairly true to type, though a sprinkling of purple straw strangers was noticeable in some cases. The average rate of seeding for the competition crops was 83 lb. of seed and 124 lb. of super. per acre. The results of the departmental tests at Willaura show that it would be profitable to increase the dressing of super. to 1½ cwt. of super. per acre.

Apart from a trace of loose smut the crops generally were free from disease, but in one instance ball smut was present. The seed had been pickled with formalin, which is an effective fungicide if used with proper care. The points to be observed in using formalin pickle are briefly:—(1) The solution should be of the correct strength (1 lb. of formalin to 45 gallons of water). (2) The seed should be immersed for three minutes and all floating smut balls skimmed off. (3) Care must be taken to prevent reinfection from smutted bags by treating the bags in the solution. One of the crops had been affected by footrot disease (*helminthosporium sativum*), which is somewhat similar to Take-all, and is difficult to distinguish from it in the field. The soil is the most frequent cause of infection. The fungus is able to attack a number of grasses, and this accounts for its presence on new land, for the spores or seeds of the disease remain alive in the soil notwithstanding that the grass in which they were formed has decayed in the meantime.

The disease is generally found to be more prevalent on light soils if seeding and germination have taken place during a warm spell. Seeding on such land should be delayed as long as possible, as this may result in germination of the fungus spores which, in the absence of the wheat, soon die. If the attack becomes very severe it will be necessary to plant oats—a crop that is never attacked by this particular form of footrot, and in this way starve out the disease.

Results.

In the open competition for the best 50 acres of wheat crop there were nine entries, and first place was taken by Mr. J. K. Morton, with a very nice crop of Federation and Gallipoli. Mr. J. Shalders gained second place with a crop of Free Gallipoli, while Mr. Morton's second entry of Federation was placed third.

BEST 50 ACRES OF WHEAT CROP.

Competitor.	Estimated Yield.	Type.	Absence of Weeds.	Freedom from Disease.	Evenness.	Total.
Possible Points	35	20	15	15	15	100
J. K. Morton (Federation and Free Gallipoli)	35	18	14	14	14	95
J. Shalders (Free Gallipoli) ..	33	16	13	15	14	91
J. K. Morton (Federation) ..	30	17	14	14	13	88
E. R. Hargreaves (Free Gallipoli)	29	17	14	13	13	86
J. Shalders (Federation and Nizam)	29	17	13	13	12	84
R. H. Grimmer (Federation)	28	19	14	12	11	84
J. Shalders (Federation and Ghurka)	26	18	14	13	11	82
R. H. Grimmer (Free Gallipoli)	26	19	14	12	11	82
W. T. Howlett (Penny) ..	24	15	12	11	13	75

In this and the following result the points allotted for yield do not necessarily indicate the estimated yields in bushels per acre.

Mr. Morton ploughed the land on which his winning crop was grown at the end of August to a depth of $4\frac{1}{2}$ inches, harrowed it immediately, and spring-toothed it early in October. It was then left till the end of February, when it was again spring-toothed. The land was harrowed in the middle of June, and the crop was then sown with the combine at the rate of 78 lb. of seed and 124 lb. of super. per acre. The seed was pickled with copper carbonate.

The land on which Mr. Shalder's crop of Free Gallipoli was grown was ploughed in June to a depth of $4\frac{1}{2}$ inches, spring-toothed in September, and again in October and November. It was disced in November, and spring-toothed before seeding. The crop was sown with the combine early in May, at the rate of 80 lb. of seed and 130 lb. of super. per acre. The seed was pickled with copper carbonate.

The third prize crop was grown on land ploughed in July to a depth of $4\frac{1}{2}$ inches, cultivated with the spring-tooth at the end of August, the end of October, and the beginning of November, harrowed at the end of April, and again before sowing at the beginning of June. The crop was sown with the combine at the rate of 77 lb. of seed and 124 lb. of super. The seed was pickled with copper carbonate, and the crop was harrowed after sowing.

Section for Soldier Settlers.

There were four entries in the section for the best 25 acres of wheat grown by soldier settlers, and the first prize was awarded to Mr. E. R. Hargreaves. Mr. G. Wilson took second and third places with crops of Free Gallipoli and Federation respectively.

BEST 25 ACRES OF WHEAT GROWN BY SOLDIER SETTLERS.

Competitor.	Estimated Yield.	Type.	Absence of Weeds.	Freedom from Disease.	Evenness.	Total.
Possible Points	35	20	15	15	15	100
E. R. Hargreaves ..	29	17	14	13	14	87
P. Wilson (Free Gallipoli) ..	26	19	13	14	14	86
P. Wilson (Federation) ..	25	19	14	13	14	85
T. W. Howlett (Rajah) ..	23	16	13	14	11	77

Mr. Hargreaves ploughed his land 5 inches deep at the end of August, harrowed it three times in October and November, skim-ploughed it in April, and spring-toothed it early in May. The crop was sown on the 24th May at the rate of 90 lb. of seed (pickled with copper carbonate), and 150 lb. of super. per acre. The land was harrowed after drilling.

The land on which Mr. Wilson's crops were grown was ploughed during the latter part of July to a depth of 5 inches. It was harrowed at the end of September, and spring-toothed in November, February, and May. Ninety lb. of seed and 100 lb. of super. were sown per acre. The seed was pickled with formalin.

Mr. Howlett ploughed his land also to 5 inches at the end of August, harrowed it in November, and skim-ploughed it in February. The crop was sown in the middle of June at the rate of 78 lb. of seed and 112 lb. of super. per acre. The seed was pickled with formalin.

This crop, which was of Rajah, was well headed, but appeared to be ripening unevenly. Some of the heads were shedding their grain while others were still green. In view of the severe winds experienced in the Willaura district, the use of a variety like Rajah, which is apt to shed its grain in windy weather, cannot be recommended.

BANNERTON FALLOW COMPETITION.

Report of the Judge, Mr. C. P. Wohlers (Manangatang).

Bannerton's entry into the competitions conducted by the Better Farming Association was marked by a commendable enthusiasm. Eighteen entries in all were received, consisting of seven, each of 100 acres, for the Cuttle Cup, and eleven each of 50 acres, for the J. R. Smith trophy.

This was satisfactory, particularly in view of the fact that the rainfall for the fallowing and subsequent period did not exceed 2 inches, and also that the district is a new one, the land having been allotted only within the last few years.

The soils inspected during the judging of the competition varied from heavy flats to sandy rises, the latter being the typical Mallee rises, while the flats are of good red land, the class of soil that, with judicious working, will produce big crops.

In the Cuttle Cup section, for the best 100 acres, Mr. J. R. Smith's entry was awarded first place with 86 points. This entry was remarkable for its moisture content. The paddock consists of two sandy rises with a small red flat between, and the method of preparation suited this class of entry in such a dry year.

The land was ploughed in June-July; harrowed immediately after; harrowed again in early August, and the third time in early September. It was then scarified at the end of September.

Mr. A. N. McCledden's entry gained second place with 83 points. In this case the soil was entirely different from that of the winning entry. It was a good red land generally with a small light rise in one corner. The fallow was scarified early in August; harrowed a month later; and scarified again early in October. Half the paddock was given an extra stroke with the combine, and, judging by the difference it made to the land, this extra working will prove to be time very well spent.

Third place went to the fallow shown by Mr. H. G. M. Phillips. This fallow, which was awarded 73 points, was prepared with the spring-tooth cultivator—a class of implement suited to the dry season. Had there been the usual rainfall, the spring-tooth would have proved unsuitable by reason of the soil becoming too flat and solid.

For the J. R. Smith trophy (50 acres), Mr. A. N. McCledden's No. 1 entry was awarded first place with 87 points, and also second for No. 2 entry with 83 points. The winning entry was a very nice fallow. The difference between the two entries was that No. 1 received an extra working with the combine just after rain early in November. Mr. Phillips's No. 1 entry was third with 76 points.

List of Awards.

BEST 100 ACRES.—THE "CUTTLE" CUP.

Name.	Moisture.	Mulch.	Cultivation.	Weeds.	Total.
Possible Points	25	25	25	25	100
J. R. Smith	23	20	21	22	86
A. N. McCledden	20	21	20	22	83
H. G. M. Phillips	17	18	17	21	73
J. W. Thompson	18	18	17	19	72
I. N. Watson	16	19	16	20	71
J. Hooking	17	17	17	19	70
E. J. Jilbert	15	13	12	12	52

BEST 50 ACRES.—J. R. SMITH TROPHY.

Name.	Moisture.	Mulch.	Cultivation.	Weeds.	Total.
Possible Points	25	25	25	25	100
A. N. McClennen, No. 1 ..	21	22	22	22	87
A. N. McClennen, No. 2 ..	20	21	20	22	83
H. G. M. Phillips, No. 1 ..	19	18	18	21	76
W. J. Thompson ..	18	18	17	19	72
I. N. Watson, No. 1 ..	17	18	17	20	72
J. Hocking, No. 1 ..	17	17	17	19	70
H. G. M. Phillips, No. 2 ..	19	14	16	21	70
E. W. Holmes ..	13	15	17	23	68
J. Hocking, No. 2 ..	15	16	17	19	67
I. N. Watson, No. 2 ..	13	16	17	20	66
E. J. Jilbert	15	13	12	12	52

NORTH-EASTERN MALLEE FALLOW COMPETITIONS.

SUNSHINE AND FERTILIZER CUP COMPETITIONS.

*Judged by R. G. Thomas, M.Agr.Sc., Inspector of Agriculture, and
R. L. Twentyman, B.Agr.Sc., Science Field Officer.*

These competitions, which are being conducted by the North-Eastern Mallee branch of the Better Farming Association, are to continue over a period of three years.

Each year 100 acres of fallow is to be shown, and the total points awarded for these and the crops grown thereon will determine the ultimate winner of each competition.

The fallows constitute the first section to be judged, and the competitions will conclude with the judging of the crops in 1930.

This year considerable stimulus had been given to the careful preparation of the fallows owing to the fact that the dry season had emphasized the necessity of a well-prepared fallow for the production of a successful crop. The rainfall in the Mallee has proved to be too unreliable for the production of payable stubble crops, and it has become quite clear that it is necessary to supplement the rainfall with moisture stored up by means of the fallow. Not only does the fallow hold moisture reserves for the crop, but it greatly assists in making available the very necessary plant food contained in the soil. In fact, the fallow is just as necessary for the plant as the haystack and dam are for the well-being of the farm animals.

Unfortunately, up to the time of judging, very little rain had fallen on most of the fallows, and the preparation of a few was somewhat backward on that account. Several on the heavier ground were still loose and cloddy underneath, and where the limestone patches had been worked rather deeply they were still extremely loose.

However, many of the fallows were in excellent condition, and in the coming season should well repay for the careful working they have received.

The Fertilizer Cup Competition includes those fallows to the north of a line running east and west through Manangatang, whilst those to the south of this line are included in the Sunshine Cup.

Fertilizer Cup Competition (Fallow Section).

Twenty-two entries were received for this competition, and the points awarded are as follows:—

AWARDS.

Competitor.	Molsture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
O. T. Baker, Winnambool	24	23	24	23	94
C. C. Cooper, Manangatang	22	23	23	24	92
J. J. Young, Kulwin ..	23	23	23	21	90
J. Cullen, Winnambool ..	22	21	23	23	89
L. J. Molyneaux, Winnambool ..	21	21	23	22	87
T. S. Lambie, Winnambool	20	22	24	20	86
J. Hought, Winnambool ..	21	22	22	21	86
A. Golds, Winnambool ..	23	21	21	21	86
N. V. Pattinson, Wemen ..	22	22	22	20	86
C. V. Coghill, Kenley ..	22	22	21	21	86
N. C. Jones, Winnambool..	22	20	23	20	85
W. H. Frost, Winnambool	22	22	20	20	84
H. P. Dyason, Winnambool	20	20	21	22	83
C. H. Fisher, Kenley ..	18	19	24	20	81
W. C. Francis, Kenley ..	20	20	20	21	81
D. F. Hogan, Kulwin ..	22	20	18	18	78
N. Langley, Manangatang	20	19	19	20	78
C. P. Wohlers, Manangatang	19	17	21	19	76
F. D. Taylor, Wemen ..	19	17	21	18	75
E. F. Amos, Winnambool..	18	17	20	19	74
F. B. Collins Wemen ..	17	16	18	17	68
K. E. A. Tonkin, Kenley ..	9	10	24	10	53

The entry of Mr. O. T. Baker, of Winnambool, consisting mainly of sand rises, was placed first with 94 points.

It had been mouldboard ploughed 3½ inches in June, and harrowed immediately; it was harrowed again in July and spring-tooth cultivated 2½ inches early in August; harrowed at the end of August, and spring-toothed and harrowed in September; it was again spring-toothed early in November.

Mr. C. C. Cooper, of Manangatang, was placed second with 92 points. This entry consisted of a large limestone flat, but by careful working the areas of rubble were well consolidated below the surface mulch, and no difficulty should be experienced in obtaining a firm seed bed.

This land was rigid-tyne cultivated, partly in February and the rest in July, to 2 inches deep. It was again rigid-tynd to 2 inches in July, and again in August and September. It was then harrowed early in November.

Mr. J. J. Young's entry at Kulwin was placed third with 90 points. This fallow had been worked with the sundereut in April to 2 inches. It was next scarified to 3 inches in June, and harrowed immediately; and it was scarified again in July to 2½ inches, then spring-toothed early in September and again early in October.

Sunshine Cup Competition.

The points awarded are as follow:—

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
Barry Bros., Chinkapook ..	22	24	24	23	93
C. E. Barnham, Chinkapook	23	24	23	22	92
J. F. Thomas, Kulwin ..	24	22	23	23	92
A. Vanderfeen, Pier Millan	20	22	22	22	86
W. J. Gray, Chinkapook ..	20	22	19	21	82
J. P. Hogan, Kulwin ..	19	20	18	20	77
C. W. Howley, Chinkapook	18	20	20	15	73
G. P. Rohde, Pier Millan ..	14	17	21	18	70

Messrs. Barry Brothers' entry at Chinkapook of a fairly heavy red to grey flat secured first place with 93 points. This fallow was very free from weeds, and the seed-bed was well consolidated at a uniform depth. It had been scarified 3 inches in March; spring-tooth cultivated at the end of July; harrowed in August, and again spring-tooth cultivated in October.

Mr. C. E. Barnham (Chinkapook) and Mr. J. F. Thomas (Kulwin) were equal second with 92 points each.

Mr. Barnham's fallow was mouldboard ploughed to 3 inches in July; harrowed immediately and spring-tooth cultivated to 2½ inches in August; it was next spring-toothed to 2 inches in September, and again to 2 inches in October. Mr. Thomas's fallow was sundereut to 3 inches in January and spring-tooth cultivated in February and April. In June it was again spring-toothed and harrowed, harrowed and cross-harrowed in July, and spring-toothed and harrowed in August. It was again harrowed in October.

CONTROL OF ORCHARD INSECT PESTS.

By H. W. Davey, Chief Orchard Supervisor.

If the losses suffered by horticulturists annually from the ravages of insect pests could be guarded against, the resulting benefits would be surprising to everybody, perhaps to none more than to orchardists themselves.

Chemistry has lent valuable assistance in making land more fertile, but the study of economic entomology has been neglected in the past, and even to-day it is too often considered as of little importance. Steps should be taken to work out the complete life cycle of the most important plant pests, and then it would be easier to suggest methods for controlling them.

At the present time most of the efforts of the orchardist are spent in attacking the insect after it has declared war on his crops, whereas in many cases if more were known of its life history, an endeavour could be made to check it at its most vulnerable stage, which, in some cases, would probably be before it commenced its direct attack on crops.

All life is controlled by food supply, and it is owing to this that we have legions of caterpillars in good seasons. It thus follows that when caterpillars are plentiful owing to abundant herbage, parasites that control the caterpillars also become very numerous. These conditions lead on to hyper-parasites or secondary parasites attacking the first parasites, and so preventing the extermination of the caterpillars, as Nature never exterminates species, and thus what we call the balance of nature is maintained.

Cleanliness and Cultivation Essential.

It is the regular and abundant food supply in orchards and market gardens that makes such places so favorable for insect multiplication. Further, practically all our insect pests are aliens, free from the controlling parasites that prey upon their kind in their native countries. It is, therefore, imperative that conditions should be made as uncomfortable as possible for these foes of the fruit-grower, and the first line of defence should be clean cultivation and orchard sanitation in general.

This season the fruit on apricot trees under which weeds were growing thickly was badly riddled by cut-worms, whereas the fruit carried by adjacent trees growing on clean cultivated land was quite free from attack by these caterpillars.

A shelter of grass weeds is likewise favorable to Rutherglen bugs. They breed freely in grass lands, and when headlands carry a riot of weeds, and rubbish is allowed to accumulate beneath the trees, the losses caused by the bugs are very much greater than on land which has been kept clean.

The removal of loose bark and fractured limbs of apple and pear trees is urged as an aid to orchard sanitation. Some time back a small piece of bark taken from an apple tree came into my possession.

In it a large number of codlings had pupated (turned into chrysalides) and the bark was placed in an observation jar, and from this one small piece of bark 41 codling moths emerged.

If this piece of bark had been left on the tree, eventually 41 moths would have escaped into the orchard. If they all were females and deposited only 25 eggs each, then these would have produced during the season a total of 1,025 caterpillars, each one of which would be capable of destroying either an apple or a pear.

It is also important to remove all suckers growing in the orchard. This applies especially to suckers from cherries that have been worked on Kentish stock, as the leaves of these are much in favour with the small introduced saw-fly, commonly known as the Cherry or Pear Slug. If a grower is indifferent to the presence of suckers he usually overlooks treating them when spraying his trees to combat the Cherry Slug, and thus any insects there have immunity until they are fully grown, when they at once pupate to emerge later on as winged insects to attack other trees.

In a bountiful apple season like the present, props are commonly used to support the overlaiden branches to prevent them from breaking down. While no fault can be found with this practice, it is undoubtedly a mistake to make use of unbarked saplings, as the bark, becoming loosened, forms a perfect hiding place for pupating codling caterpillars. In orchards where bandaging the trees is practised, a big percentage of the grubs will choose the props in preference to the bandages, thus neutralizing to a very serious extent any good that might have been derived from the bandages.

On the other hand, if the props be first barked and the trees kept free from loose bark, holes, fractures, or other hiding places, then the bandages will undoubtedly give better results. In all cases, therefore, props should be stripped of their bark before being used in the orchard.

Codling Moth.

For the control of codling moth, the first application of arsenate of lead should be made as soon as the petals fall (not before), and then at intervals of from 20 to 30 days. The spray should be made at a strength of 5 lb. of lead arsenate paste to 80 gallons of water, but if the powder form be used, 2½ lb. to 80 gallons of water will be sufficient. In the case of early fruits, spraying with arsenate should cease 30 days before harvesting, but with late varieties spraying should be kept on until the first week in March, after which no further applications should be made.

During the season all affected and fallen fruits should be regularly gathered and destroyed.

Pear and Cherry Slug.

Spray as soon as leaves are well developed with arsenate of lead at the rate of 5 lb. to 80 gallons water. Ripening cherries must not be sprayed, but a spray should be applied as soon as possible after the fruit has been harvested.

In all cases where cherry slug was present the preceding year, a spray should be applied as soon as the fruit has set, in anticipation of an attack by these insects.

Borer of Stone Fruit Trees.

This moth is seldom seen by orchardists, but the tunnels in the stem and branches made by its caterpillar are unfortunately only too well known in some districts. Spraying is of no value against these caterpillars, the better method being to locate the opening of their tunnel, and insert into the hole a small piece of cotton wool dipped in bisulphide of carbon and afterwards plug up the hole with a piece of well worked clay, putty, or soap.

Pear Root Aphis.

These insects have now become a very serious pest of pear trees, and when plentiful on the roots of young trees will so stunt and dwarf them as to render them useless for planting out in the orchard. When bearing trees are attacked they are devitalized owing to the small feeding roots being killed outright, and the larger roots suffer according to the extent of the injury done to the smaller ones.

An application of sulphate of iron—2 lb. per tree—affords some protection to small trees, but as the roots of large bearing trees meet in the rows, the difficulty of controlling these insects by means of soil fumigants or chemical applications becomes at once apparent, for control by such methods would mean that every part of the land would have to be treated before success could be hoped for. The only sound method of control then appears to be by employing a blight-proof stock, as is done with the apple, to protect the roots from attacks by woolly aphis.

In *Pyrus calleryana* we have a pear which is not only proof against pear-root aphis, but one that is also very resistant to the dreaded fire blight (*Bacillus amylovorus*)—a most serious bacterial disease—which fortunately up to the present time is unknown in Australia.

In addition to these excellent qualities, *Pyrus calleryana* stands in close affinity to our leading commercial pear varieties, and therefore makes a good union with the scions of these, and both stock and scion grow at almost the same rate, and are free from any dwarfing effect, and in addition the union is both strong and good.

P. calleryana is only useful as a pear stock, its fruit being quite useless except for seed purposes.

Woolly Aphis of the Apple.

This can now be very effectually controlled by a small hymenopterous parasite—*Aphelinus mali*—which all apple-growers should introduce into their orchards.

In those orchards where this useful insect has not yet been established, the trees should be sprayed during the dormant season with combined nicotine sulphate and miscible oil emulsion, 1 gallon of miscible oil and 1 pint of nicotine sulphate being used to 80 gallons of water.

Always dilute nicotine before adding it to the oil emulsion. For summer use, the amount of oil should be reduced to half a gallon. In severe infestations two sprayings should be given, the second about a week later than the first.

In orchards where the aphelinus is becoming established, and it is found necessary to spray trees that are heavily infested with woolly aphis, these should be carefully examined before spraying for any parasitized aphis; affected aphides can be easily recognized by their black swollen bodies. If they are found to be numerous, the trees bearing them should not be sprayed with contact insecticides. If for any reason spraying is decided upon, then the twigs showing the most parasitized aphides should be cut off and removed to another part of the orchard before the spray is applied.

The wood on which the parasites are working must be kept sappy. This can be done by placing one end of the twig in a tin or bottle containing moist earth or water. This is important so as to prevent the wood dying, and so killing the already weakened aphides, for if an aphis dies prematurely, the parasite contained in its body also dies, the body juices of its host being insufficient to bring it to maturity.

Peach Aphis.

These insects can be effectually controlled by applying an ovicide in early spring—3 gallons miscible oil to 80 gallons of water. This may be followed up with a dual purpose spray when the blossoms are in the pink stage. Miscible oil—3 gallons to 80 gallons water—and Bordeaux mixture to which has been added nicotine sulphate at the rate of 1 pint to each 80 gallons make an effective spray for both aphis and leaf curl.

In all cases where nicotine sulphate is added to other spray mixtures, it should be first diluted by the addition of 3 or 4 gallons of water.

In dealing with peach aphis it should be remembered that this pest increases very rapidly, and spraying should be very carefully carried out, for if only a small portion of any tree carrying live aphis be missed, the whole of the tree may become affected again in a very short space of time.

General.

It is of the first importance in the control of insect pests to keep trees healthy by means of cultivation, manures, sub-drainage where necessary, and by not allowing the tops of trees to become crowded.

All insects seen in the orchard are not enemies of the orchardist; probably most of them are friends, but as the pests are so much to be feared, unfortunately all insects are by many held in distrust. It should be the desire of every fruit-grower to be acquainted with the habits of the different classes of insects likely to be found in his orchard so that he may know whether to destroy or welcome them.

As a final piece of advice, let me say—Always spray in time, and never spray by rule of thumb.

THE MAKING OF STACK SILAGE.

P. Ryan, B.Ag.Sc., Inspector of Agriculture.

The present season offers exceptional opportunities for the conservation of fodder in the form of silage. As a result of the splendid rains received in the late summer and autumn, summer fodder crops, such as maize, Sudan grass, millet, and sorghum have made excellent growth. In addition, on account of the plentiful supply of grass, these crops have not been used for feeding off, and can therefore be conserved. Those who possess silos will, of course, have no difficulty, but judging from the number of letters recently received by the Department, there are many anxious to convert their summer fodder crops into silage, but not having a silo are at a loss to know how to proceed.

The following notes on stack silage are published for the guidance of such farmers:—

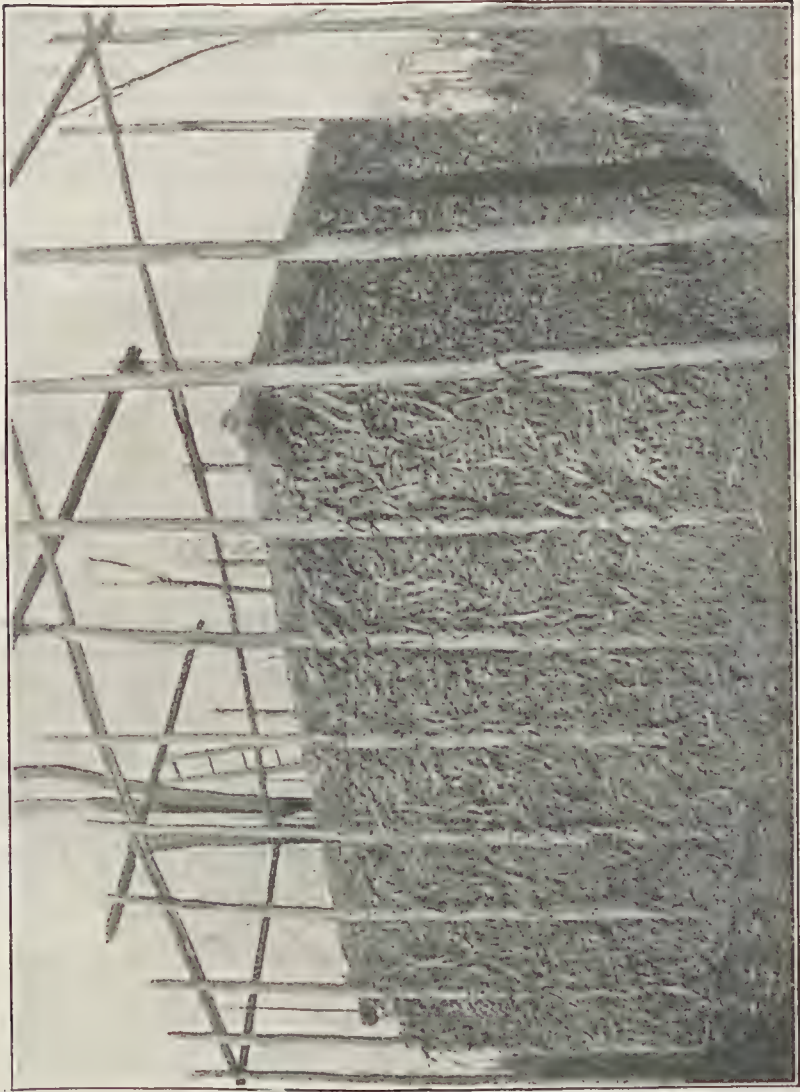
The making of stack silage is not recommended where other forms of silo are available, on account of the waste that occurs at the sides and ends, but in case of emergency it provides a useful form of fodder conservation.

The shape of the stack should be one which will give a maximum height and a minimum area. A long narrow stack would enable the daily requirements to be taken from the stack while exposing a minimum of fresh surface to the air.

In building a stack of maize for silage, it is advisable to use a framework of poles. These poles should be about 17 ft. 6 in. long, and about 4 or 5 inches at their small end, and should be sunk into the ground 20-24 inches. The poles should be spaced about 3 feet apart, and the framework braced at the top. A light pair of poles should be erected at each end of the framework, and a cross piece provided to carry the heads of the end rows of bundles during stacking.

The site selected for the stack should be well drained, and before commencing to stack a shallow drain should be opened around the outside of the framework. A foundation of 6 inches to 1 foot of grass or any coarse material should be placed to receive the first layer of bundles, and a start made by placing the first row of bundles with their butts in line with the end pair of uprights in the framework. Successive rows of bundles, each overlapping the last, are laid until the entire floor of the framework is covered, the heads of the last row protruding from 30 to 36 inches beyond the last pair of uprights. In placing the second layer, the heads and butts are reversed, and the stacking continued in this manner. When a height of about 30 inches has been reached, a rough straight edge should be laid across the ends of the stack on the outside edges of the last pair of uprights, and the protruding ends of the bundles cut off and thrown back into the body of the stack.

After the first trimming, light cross-pieces are placed in position against the additional pair of uprights at the end of the framework, so as to carry the protruding heads of the bundles of the ensuing



Framework and Stack in Course of Construction.

layers. For satisfactory results a depth of at least 2 ft. 6 in. should be put on daily. This is particularly necessary if the material is on the dry side. The stalks should be kept laid the same way, as transverse layers will admit too much air. The centre of the stack must be kept well "hearted" up, as the heating will cause abnormal settling there. There will be waste at the ends and sides, but it can be reduced by care in stacking. Wires heavily weighted should be thrown across the stack at night time. When the stack is finished spread a layer of several inches of grass on top of the silage and water it well. A framework of logs is then placed evenly on top of the stack, and a layer of about 12 inches of soil is spread over the surface of the stack and kept in position by the logs. Finally wires heavily weighted are placed across the top of the stack.

A stack 12 feet x 10 feet x 15 feet will hold approximately 40 tons of silage, and will settle down to about two-thirds of its original dimensions. The success of a silage stack depends very largely on the fodder being consolidated sufficiently to exclude air, which causes rapid deterioration if admitted.

TO CLEAN TOMATO SEED.

The best method of separating tomato seed from the surrounding pulp is as follows:—Cut the fruit in halves and scoop the contents into a bucket, and when the latter is about half full, fill up with water. Stand the bucket aside and allow the contents to ferment, which will take from two to six days, according to the warmth of the weather. A froth forms on top of the water when fermentation is sufficiently advanced. Wash the contents of the bucket on a fine sieve or a layer of hessian and the pulp will come right away from the seed, which must be spread out in a thin layer to dry. Rapid drying is important to prevent moulding. When dry, rub the seed in the hands to separate the individual seeds. Seed harvested in this manner has averaged 94 per cent. germination.

A few points in the selection of the fruit are worth noting. Select only from the best yielding plants which conform strictly to the characteristics of the variety, both as regards type of vine and type of fruit. Cut several fruit open to be sure of the quality. Choose a plant that produces a large number of average size tomatoes rather than a plant with two or three large fruits and a number of small ones. Be sure the plant is free from disease, as several tomato diseases are transmitted by the seeds. As a further precaution, the seeds, before planting, should be dipped for ten minutes in a solution of mercuric chloride, 1 part in 1,000 parts of water. The seed should then be rinsed in clean water and dried.

—*Agricultural Gazette of New South Wales*, March, 1928.

FERTILIZERS ACT 1915.

NOTES ON OPERATION OF THE ACT FOR SIX MONTHS ENDED 31st DECEMBER, 1927.

By W. R. Jewell, M.Sc., Agricultural Research Chemist.

A list of fertilizer samples collected and analysed during the six months ending 31st December, 1927, is given below, and shows the manufacturer's guaranteed composition and that found on analysis. It will be noted that in practically all instances the samples were well up to guarantee.

At the Mildura Court of Petty Sessions on 15th November, 1927, the local agent for the Victor Plant Food and Gardening Company Pty. Ltd. was convicted on a charge of selling a fertilizer without supplying an invoice certificate as required by the Act. Defendant was fined 20s., with £12 0s. 8d. costs. In the City Court on 21st November, 1927, Dalgety and Company were convicted on a similar charge and fined £2 with £1 1s. costs.

An Adelaide firm applied for registration of its fertilizer, the price of which was £17 per ton, whereas the calculated commercial value was only £6 10s. Valuable properties were claimed for the fertilizer on the ground that it contained azotobacter chroococcum, a nitrogen fixing bacterium. Tests, confirmed by the Bacteriological Department of the University, failed to detect the presence of this organism, and, under the power vested in the Director of Agriculture by section 19 (1) of the Act, registration was refused. Prompt action at Mildura by the laboratory staff prevented many orchardists there from purchasing parcels of this fertilizer in ignorance.

Acting under instructions from the Hon. the Minister of Agriculture, registration of fertilizers for 1928 was refused in all cases where the price charged was more than 25 per cent. in excess of the commercial value as computed from guaranteed composition and unit values, allowing, in the case of mixed fertilizers, £1 per ton to cover cost of mixing. This action was taken under the power vested in the Director as above, and resulted in the refusal to register some six brands of fertilizer.

This year has seen the registration of several of the newer, synthetic, concentrated fertilizers much in vogue in Europe. While these fertilizers are of considerable importance, it would appear that their usefulness in this State is at present somewhat limited.

A small pamphlet, "Fertilizer Prices, or Protecting the Purchaser," was printed, explaining in simple language the use of unit values in evaluating fertilizers and other important points to be observed in purchasing fertilizers. The great demand for this publication was an indication of its usefulness to the farming community.

FERTILIZER SAMPLES.

Blood Manure.

Brand.	Nitrogen as Blood.		Phosphoric Acid.	
	Guaranteed.	Found.	Guaranteed.	Found.
	%	%	%	%
Wischer and Co.	7·50	8·03	..	..
M.C.C. (Melbourne City Council) ..	7·75	8·18	1·13	1·41

Sulphate of Ammonia.

Brand.	Nitrogen as Ammonia.	
	Guaranteed.	Found.
	%	%
M.L. in diamond (Mount Lyell) ..	20·00	20·44

Superphosphate.

Brand.	Phosphoric Acid.			Total.
	Water Soluble.	Citrate Soluble.	Citrate Insoluble.	
	%	%	%	%
Guarantee.	20·50	0·50	1·00	22·00
M.L. in diamond, 22% (Mount Lyell) ..	20·43	0·74	1·61	22·78
.. .. .	20·90	0·74	0·94	22·58
Cresco 22 (Cresco Fertilizers)	20·43	0·38	1·74	22·55
.. .. .	20·99	0·81	0·96	22·76
Wischer and Co., 22%	20·06	0·32	1·18	21·56
.. .. .	20·54	0·49	1·02	22·05
.. .. .	21·17	0·54	0·36	22·07
Sickle Florida, 22% (Cuming, Smith and Co.)	20·62	0·52	0·52	21·66
.. .. .	21·64	0·33	0·86	22·83

Super. and Bone.

Brand.	Nitrogen as Blood and Bone.	Phosphoric Acid.			Total.
		Water Soluble.	Citrate Soluble.	Citrate Insoluble.	
	%	%	%	%	%
M.L. in diamond No. 2—					
Guaranteed	1·00	15·75	1·79	2·57	20·11
Found	1·06	15·98	1·35	4·60	21·93

Blood and Bone.

Brand.	Nitrogen as Blood and Bone.	Phosphoric Acid.		
		Citrate Soluble.	Citrate Insoluble.	Total.
	%	%	%	%
M.L. in diamond—Blood and Bone—				
Guaranteed	5.00	6.00	10.00	16.00
Found	5.44	5.10	11.10	16.20
Pannifex's No. 4—Animal Fertilizer—				
Guaranteed	5.50	5.00	10.00	15.00
Found	4.38	6.14	14.50	20.14
Arch Blood and Bone (Amalgamated Freez- ing Co. Pty. Ltd.)—				
Guaranteed	4.50	3.00	9.00	12.00
Found	5.15	5.20	8.78	13.98
Donald Blood and Bone (Amalgamated Freezing Co. Pty. Ltd.)—				
Guaranteed	7.50	4.25	4.25	8.50
Found	7.18	3.62	6.18	9.80
King's Blood and Bone (J. C. King, Geelong)				
Guaranteed	5.20	5.23	11.02	16.25
Found	4.93	5.71	10.97	16.68

Bone Fertilizer.

Brand.	Nitrogen as Blood and Bone.	Phosphoric Acid.			
		Water Soluble.	Citrate Soluble.	Citrate Insoluble.	Total.
	%	%	%	%	%
Wischer and Co.—Bone Fertilizer—					
Guaranteed	4.00	1.50	4.84	8.08	14.42
Found	3.92	1.83	5.55	6.21	13.59

Complete Fertilizers.

Brand.	Nitrogen.			Phosphoric Acid.				
	As Ammonia.	As Blood and Bone.	Total.	Water Soluble.	Citrate Soluble.	Citrate Insoluble.	Total.	Potash.
	%	%	%	%	%	%	%	%
Wischer and Co. Market Garden Manure—								
Guaranteed	1.50	1.56	3.06	11.15	1.47	2.55	15.17	2.50
Found	1.27	1.82	3.09	10.36	1.20	2.36	13.92	3.18
Sickle Market Garden Manure (Cuming, Smith and Co.)—								
Guaranteed	1.50	1.56	3.06	11.15	1.47	2.55	15.17	2.50
Found	1.60	1.58	3.18	11.90	1.60	2.66	16.16	2.40
Victor Plant Food No. 1—								
Guaranteed	2.10	1.40	3.50	11.00	0.50	0.50	12.00	3.00
Found	1.99	2.33	4.32	10.36	1.08	0.65	12.09	3.40
Found	2.40	2.27	4.67	9.24	1.22	1.18	11.64	3.60
Victor Plant Food No. 2—								
Guaranteed	0.04	3.96	4.00	6.40	1.40	1.30	9.10	1.00
Found	0.44	2.91	3.35	7.52	1.97	3.71	13.20	0.90

THE PACKING OF APPLES.

THE CANADIAN "STANDARD" BUSHEL CASE.

(18 x 11½ x 10½ inches, inside measurement.)

By Basil Krone, Fruit Packing Expert.

Hereunder is printed a packing chart giving particulars of the different packs that can be used with the Canadian "Standard" Bushel case.

Those new to the work of apple-packing are advised, when packing Jonathans or other round-shaped varieties, to try first of all the packs marked *, adopting the others as circumstances make them desirable.

PACKING CHART—THE CANADIAN "STANDARD" BUSHEL CASE.

(18 x 11½ x 10½ inches, inside measurement.)

Size.	Pack.	Layer Description.	Number of Layers.	Total.	Remarks.
2½	3—3	8 x 8	5	240	
2½	3—3	7 x 6	6	234	Pack looser than usual
2¼	3—3	8 x 7	5	225*	245 count in "dump" case
2¼	3—2	9 x 9	5	225	Seldom used
2¼	3—2	9 x 8	5	213	
2¼	3—3	7 x 7	5	210*	
2¼	3—3	6 x 6	6	216	Pack looser than usual
2¼	3—2	8 x 8	5	200	Pack tighter than usual
2¼	3—3	6 x 5	6	198*	Pack looser than usual
2¼	3—3	7 x 6	5	195*	210 count in "dump" case
2¼	3—2	8 x 7	5	188	Pack tighter than usual
2¼	3—3	6 x 6	5	180*	193 count in "dump" case
2¼	3—2	7 x 7	5	175*	175 count in "dump" case
2¼	3—3	6 x 5	5	165*	
2¼	3—2	7 x 6	5	163	
2¼	3—3	5 x 5	5	150*	Pack looser than usual
2¼	3—2	6 x 6	5	150	163 count in "dump" case
2¼	3—2	7 x 7	4	140*	Pack tighter than usual
2¼	3—2	6 x 5	5	138	156 count in "dump" case
2¼	3—2	7 x 6	4	130	Pack looser than usual
2¼	3—2	5 x 5	5	125*	144 count in "dump" case
2¼	3—2	6 x 6	4	120*	Pack looser than usual
3	3—2	5 x 4	5	113	120-132 count in "dump" case
3	3—2	6 x 5	4	110*	Pack tighter than usual
3	2—2	7 x 6	4	104	108 count in "dump" case
3	3—2	5 x 5	4	100*	Pack tighter than usual
3	2—2	6 x 6	4	96	
3¼	3—2	5 x 4	4	90	
3¼	2—2	6 x 5	4	88	
3¼	2—2	5 x 5	4	80	
3½	2—2	5 x 4	4	72	

Counts from 72 to 113 inclusive are not recommended for London markets.

Some Rules to be Remembered.

There are a few rules which must be observed, no matter what system of packing is adopted.

Apples of similar size may be packed in various ways, the grower choosing the counts he finds best for "long," "flat," and "medium-shaped" varieties. Two important requirements for the packing of all fruit so that it may be carried without injury over long distances are—

- (1) It should be packed to the "correct height" in the case (up to two inches at centre of the "bulge," and up to, but not more than, one inch above the top at each end).
- (2) The "snugness" of the specimens in each layer. The fruit in any one layer must NOT rest directly on top of the fruit beneath, **BUT IN THE SPACES**. In other words, "No one fruit should rest directly on top of another in any direction."

Apples should be packed on their "cheeks." It is the size of the "pockets" or "spaces" between the apples that controls the height of the fruit in the case. In order that the correct height may be obtained some sizes should be packed tightly; others must be packed loosely.

THE MAKING OF SALADS.

An address by F. de Castella, Government Viticulturist, broadcast through 3 LO.

Salad does not, at first sight, seem to have much to do with viticulture; and yet, in two ways, it has.

Vinegar is an essential ingredient, and really first class vinegar can only be made from wine or fruits. It is true that malt vinegar satisfies most Australian palates. This, however, is a poor substitute, lacking the ethereal delicacy of good wine vinegar which, in the opinion of recognized authorities, is vastly superior.

In the second place, it is the wine-growing countries that are the largest consumers of salad—the Latin peoples of the Mediterranean. Salad is indeed said to be a legacy to the Italians from ancient Rome. From Italy it spread to France where, nowadays, it is most largely consumed and in the greatest variety.

I fear that many a charming housewife may think it impertinence for a mere man to suggest any alteration in the menu; she knows all about salad, and has nothing more to learn concerning it. It will be conceded, however, that one does meet with queer salads—finely shredded concoctions, swimming in what looks like weak whitewash. To even suggest, as I propose to do, that there are other and better ways, demands some temerity. Emboldened by the enforced silence of my large audience I take my courage in both hands, and shall try to tell you how salad is made in the lands of its greatest popularity.

One of the greatest advantages of this class of food is that it renders very palatable in a raw state many vegetables which otherwise would not be thus consumed.

Cooking, no doubt, has its advantages; it differentiates man from the brute creation. It nevertheless has serious drawbacks in the destruction of some of the vitamins we now know to be so essential to health. A certain proportion of our daily ration should consist of uncooked food. Salad, fresh fruit, uncooked raisins, light natural wines, milk, and oysters are the only form this can conveniently take. In salad we can obtain our vitamin supply most easily and most agreeably.

In Latin countries a dinner is seldom complete without salad, and it usually figures also at lunch or dejeuner. It is not, however, relegated to the end of the meal in the shape of "cheese and salad"—a common mistake in many of our Melbourne restaurants. The proper place for salad is with roast meat or poultry.

In a chat such as the present, it is safe to follow Mrs. Beeton's lead, and deal first with the ingredients and afterwards with the mode of treatment they receive.

The ingredients are indeed multifarious, for there is an almost infinite variety of salads, a feature that ensures one not tiring easily of them. My time limit will not permit going into the list fully. I must pass by the excellent but complicated salads Russe, lobster salad, potato salad, and many others. Lettuce is the basis, but any vegetable fit for human consumption in the fresh state and a great many others that must first be cooked can enter into its composition. To-night I must confine myself to the simplest form—plain lettuce salad. The ingredients are lettuce, of course, as basis, with which may be included various other raw vegetables, such as radishes, celery, tomatoes, cucumbers, &c., and the substances that constitute the dressing, viz., oil, vinegar, onions, salt, pepper, and mustard.

I approach the consideration of two of these with some trepidation, as they are the object of a good deal of prejudice in Australia. One of these is altogether indispensable, whilst the other is to the initiated a welcome addition. These are oil and onions.

A salad without oil is like a sandwich without butter. I am aware that it is repugnant to some Australian palates. Oil is to many an acquired taste, but it is a taste well worth acquiring. Olives and oysters are seldom appreciated when first tasted, yet they are recognized delicacies. So it is with oil. As to its wholesomeness, there can be no two opinions. We do not realize the very important part played by oil in the every day life of Latin Europe. "The olive is the first of all trees," wrote Columella nearly 2,000 years ago, and to-day, on the Mediterranean, the olive largely replaces the cow in the diet of the people. In Spain three and a half million acres are planted with olive trees. The oil must, of course, be of good quality. Rancid oil is an abomination. The poor quality of a great deal of the so-called salad oil is no doubt responsible for much popular prejudice.

Another debatable point is the question of the onion—its admissibility or otherwise. It will be generally agreed that there are

occasions when it cannot be admitted. At a dinner followed by a dance, for example. But there are many occasions when the judicious use of onions is a marked improvement.

From a culinary point of view, the onion is the greatest of all lilies; its conquest of Southern Europe dates back many centuries. To-day its imperium over that region will be admitted by all who have sojourned there. The majority soon become converts—in self-defence. Once acquired, however, the taste is a valuable asset.

The friends of the onion claim wonderful virtues for it, and the prevention of many ills. It is even said that Spanish influenza originated in a year when the onion crop failed in that country.

Is it a prophylactic against typhoid, as is claimed by some? I am not competent to express an opinion, but in many Mediterranean regions where wine, oil, and onions are lavishly partaken of, and where sanitation is deplorable, there is much less typhoid than the English visitor would expect.

In a salad, onions must be used with discretion; true art demands that no one flavour should obtrude or dominate. An excellent guide is the taste of the guests to be catered for.

The onion element can be introduced in various forms, some less aggressive than others. Chives are the most delicate. They are the thin end of the wedge, and will serve to break the uninitiated in to something stronger. Then we have a gamut of different sorts, such as shallots, odorless onions, spring onions, &c., leading up to the ordinary onion of trade—the standard brown Spanish.

For those not afraid of heroic doses there is garlic—a word that can scarcely be pronounced aloud without offending susceptibilities. And yet, has not Kipling immortalized “Them spicy garlic smells”?

Few are bold enough to put garlic itself into salad. A couple of bread crusts well rubbed with a cut clove of the plant and only left in during the mixing process will impart sufficient perfume for even an enthusiast.

Concerning the other ingredients, there is little to say. They are the usual condiments—salt, pepper, and mustard. Opinions differ concerning the latter, some hold it to be out of place in a salad, but more often it is included. The golden rule is to “season according to taste.” No one flavour should predominate. An old French proverb tells us that it takes four men of different temperaments to make a salad—a spendthrift to supply the oil, a miser for the vinegar, a judicious man for the condiments, and a lunatic to mix the lot. But this brings us to the consideration of the mode.

In a ceremonial dinner where there are many guests, the salad is made in the kitchen, but where the party is a small one, it is usual for the master of the house to make it, at table, immediately before it is served. Freshness is thus assured; it rapidly deteriorates on standing.

The lettuce with the proper proportion of finely chopped onion is tastefully arranged in the salad bowl. There are various sorts of lettuce, cabbage, endive, &c.—all excellent if well and quickly grown, so as to be white, crisp, and tender. With these may be mixed the various other plants, serving to modify flavour and give variety. Among these are celery, cress, and some that are less familiar, such as

chervil, tarragon, &c. These must be judiciously used, so as not to overdo any particular flavour. Garnishings are often added to ornament the bowl, such as sliced hard-boiled eggs, orange, and yellow nasturtiums, the blue flowers of borage, or even the scarlet pimpernel. Much scope for decorative talent is here afforded.

It is essential that the lettuce be as free from surplus water as possible. Thorough washing must therefore be followed by active swinging in a clean towel or, better still, in a wire basket specially made for the purpose.

It was formerly held that the lettuce should be broken with the fingers and not cut up with a knife. The advent of the stainless knife has, however, relaxed this once excellent rule.

Some hosts prepare the dressing separately, pour it over the contents of the bowl and then mix thoroughly.

A better way is first to sprinkle the requisite quantity of salt and pepper over the contents of the salad bowl, which are then lightly turned with the spoon fork to ensure distribution. Oil is next added at the rate of about three or four salad-spoonfuls for four or five persons, and the contents are again turned; this for the reason that the oil is much better absorbed by the leaves when they are nearly dry and before the addition of vinegar, which is the final ingredient to go in. If the vinegar be strong, the quantity should be about half that of oil; if weaker, more should be used. If mustard is used, and I think it is a decided improvement, the dry mustard should be mixed in the vinegar before tipping it into the bowl. As soon as this has been done, the contents of the bowl are energetically mixed. The lunatic "stunt," in fact, and the salad is ready to be passed round.

When lettuce is not procurable, salad may be made in the way just described, with various cooked vegetables, such as beetroot, haricot beans, lentils, &c.

An excellent salad may also be made with apples in just the same manner, the apples being peeled, cored, and finely sliced. A mixture of this fruit with onions, oil, &c., may seem rather strange to many; to those who have doubts, I will only say—try it.

Fruit salad I have not mentioned. It is an excellent dish, but one which is deservedly familiar. Further remarks concerning it are needless.



SHEEP DIPPING.

An Improved Dip.

The following letter has been received by Mr. N. A. Bowman, Sheep and Wool Expert of the Department of Agriculture, from Mr. G. W. McDonald, head of the Wool Department, Gordon Institute of Technology, Geelong:—

“As the sheep dipping season comes round one often wonders, when engaged in this annual operation, whether some improvement could be devised to make the process an easier one. Walk in and slide dips are, and have been very serviceable, but suit some classes and ages of sheep better than others. Almost every sheep-owner will readily admit the difficulty experienced in getting the sheep up to the dip.

“Messrs. Leigh Brothers, of Roselea, near Geelong, the designers of the dip, plans of which are set out here, recently issued an invitation to several people likely to be interested to see the dip under actual working conditions. The whole party were unanimous in their report as to the improvement effected by the use of this new design.

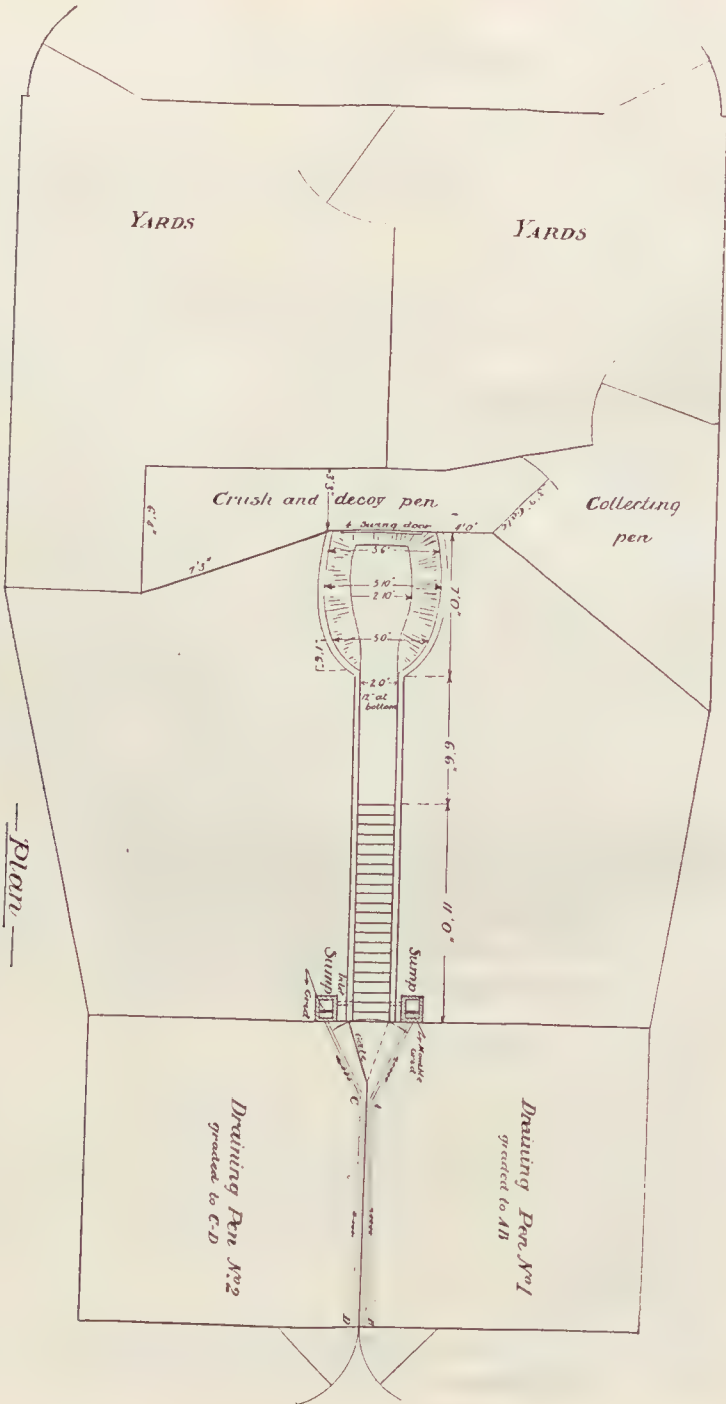
“One special feature is the decoy pen, which is situated well past the end of the dip, thus sheep when coming in are driven past the end and not towards the dip. All ages of sheep can be handled by one man right from the collecting pens into the bath or swim. By sliding into a pool first, the sheep have plenty of room for immersion, and are unable to get away before being put under. In other words, you have complete control of the sheep all the time. This pool also does away with the extra long swim that is advocated by many, though, of course, the swim can be made as long as desired.

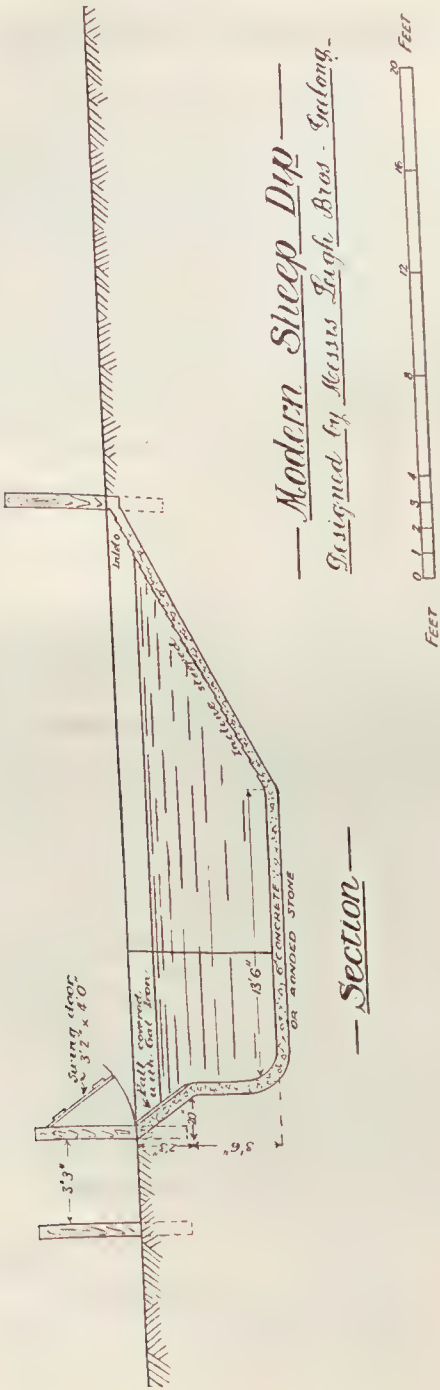
“Another advantage of using the pool is that the user can commence dipping with, say, 1,200 gallons, and continue down to as low as 500 gallons, and even lower for lambs. This is a big consideration to many. A sheep three days after shearing will take out approximately one-third of a gallon, and one, say, a month after, would carry out about three-quarters of a gallon, so it can be readily seen that there is a distinct advantage in being able to dip at a low level. Further, if it should so be desired, the walk out could be made in an easier incline, say for weak sheep, &c.

“This design is most suitable for large or small sheep-owners, and can be operated by two men easily. In my opinion it is the best improvement made towards the handling of sheep that we have seen for some time, and the designers are deserving of special credit for progressive policy.

“These particulars are given with the sole idea of passing on to those interested something that we find is an outstanding advantage to us in our work.”

Further information regarding the dip may be had from the Department of Agriculture, or from the School of Wool Sorting, Gordon Institute of Technology, Geelong.





TOP-DRESSING PASTURES.

TESTS AT KORUMBURRA.

Established two years ago, the pasture top-dressing experiments conducted by the Department of Agriculture at Korumburra on the property of Messrs. M. C. Lindsay and Sons, have shown that, even on the fertile chocolate soils in this district, an application of superphosphate has a markedly beneficial effect on the pasture. The experimental field is divided into two parts; one is devoted to comparatively large plots, and the other to small demonstration plots. In the bulk plots the effect of dressings of superphosphate at the rate of 1 cwt. and 2 cwt. per acre respectively are being tested against an unmanured plot. The produce from these plots is cut each year and the grass hay obtained is weighed. The average results from these plots for the past two years are as follow:—

Treatment.						Yield Per Acre.
No manure	..	..	..	..	..	12.78 cwt.
Super. 1 cwt. per acre	..	..	..	..	..	13.60 cwt.
Super. 2 cwt. per acre	..	..	..	..	..	17.54 cwt.

Although there has been a definite increase in the quantity of herbage grown on the top-dressed plots, the appearance of the plots showed no very striking difference to the casual observer. Closer examination, however, proved that the fertilizer had had a very marked effect in improving the quality of that herbage. This effect is indicated in the results of a botanical analysis of the produce cut from the demonstration plots. These show that where super. has been applied there has been a substantial increase in the percentage of clovers and useful grasses, and a corresponding decrease in the proportion of weeds. On the unmanured plot the herbage contained no clovers at all, but was made up of 45 per cent. of grasses and 55 per cent. of weeds—mainly flat weed and dandelion. Where 1 cwt. of super. per acre had been applied 18 per cent. of the herbage consisted of clovers, 65 per cent. of grasses, and only 17 per cent. of weeds. With super. at the rate of 2 cwt. per acre the proportion of clovers was increased to 21 per cent., and with a similar dressing of super. applied in spring, to 23 per cent. Basic slag applied at the rate of 2 cwt. per acre proved less effective than the super., the proportion of clovers being lower and of weeds higher. Ammonium sulphate and potash applied with the super. gave no beneficial results, while nitrate of soda and ammonium sulphate applied alone produced no improvement—clovers being entirely absent from each of the plots treated with these fertilizers.



F.A.Q. WHEAT.

ANALYSIS OF SAMPLE.

Although the wheat sample from the recent harvest was not a particularly good one, an analysis of the F.A.Q. sample made by the Department of Agriculture shows that, with regard to milling qualities the grain compares very favorably with that from the preceding harvest—particularly in regard to protein content. The percentage of protein in the 1928 sample is 11.63 as compared with 9.28 per cent. in that for 1927. Again, the moisture content of the grain is slightly lower than was the case last year, while there is a decrease in the proportion of impurities from 3.36 per cent. to 2.54 per cent. The actual figures for the analysis are as follow:—

		F.A.Q. 1927. Per cent.		F.A.Q. 1928. Per cent.
Moisture	...	9.47	...	9.41
Impurities	...	3.36	...	2.54
Ash	...	1.36	...	1.47
Nitrogen	...	1.63	...	2.04
Protein	...	9.28	...	11.63

The flour yield of the sample is slightly higher than was obtainable from last season's wheat, and there is a marked increase in the nitrogen and protein contents of the flour, and a corresponding increase in the gluten content. There is a slight increase in the water absorption capacity of the flour, and the volume of the standard loaf is increased from 1,580 c.c. to 1,680 c.c. A comparison of the flours made from the two samples is afforded by the following details:—

		1927 Sample. Per cent.		1928 Sample. Per cent.
Flour—Yield	...	69.5	...	70.0
Ash	...	0.53	...	0.48
Nitrogen	...	1.45	...	1.78
Protein	...	8.26	...	10.11
Wet gluten	...	23.56	...	31.28
Dry gluten	...	7.93	...	10.44
Water absorption	...	40.2 qts.	...	45.0 qts.
Standard loaf—volume	...	1,580 c.c.	...	1,680 c.c.

Both pollard and bran from this season's wheat show higher protein content than was the case last year. Details are:—

		Per cent.		Per cent.
Pollard—Ash	...	2.29	...	3.26
Nitrogen	...	2.28	...	2.80
Protein	...	14.25	...	17.50
Bran—Ash	...	3.76	...	3.68
Nitrogen	...	2.02	...	2.52
Protein	...	12.60	...	15.77

FLAXSEED PRODUCTION IN RUSSIA.

Flaxseed production in Russia for 1927 is estimated at 23,621,000 bushels, according to information supplied by the International Institute of Agriculture at Rome.

This is an increase of 15.4 per cent. above last year's crop. The 1927 total production of flaxseed for sixteen countries so far reported is 143,483,000 bushels, or 17.6 per cent. above the production of 121,968,000 bushels by the same countries in 1926.

Although Russia is one of the world's most important flaxseed producing countries, most of the crop is consumed within the country, and the exportable surplus in recent years has been too small to materially affect the world situation. Shipments of flaxseed from Russia to other countries during 1927 were reported by the trade to have been only 110,000 bushels, compared with 2,216,000 bushels shipped during 1926. No shipments have been reported for 1928.

Production of hempseed in Russia for the 1927 season was estimated at 30,063,000 bushels, according to the International Institute of Agriculture. In 1926 production was 25,166,000 bushels. Russia is the world's principal grower of hempseed.

CANADA'S WHEAT AND FLOUR EXPORTS, 1927.

Wheat and flour were exported from Canada in 1927 to 45 countries, the total amounts being 251,265,788 bushels of wheat and 9,247,824 barrels of flour. The British Isles took 185,345,710 bushels of Canadian wheat, or two-thirds of the total exported, and 3,318,435 barrels of flour, more than one-third of the aggregate sold to all countries.

Italy was the Dominion's next best customer in wheat with 12,030,759 bushels; Belgium third with 8,103,857 bushels; Japan fourth with 7,948,715; Germany fifth with 7,748,896 bushels, and the United States sixth with 7,624,566 bushels. The other purchasers of Canadian wheat are widely scattered throughout the world.

Germany was second in the list of consumers for flour with 1,002,943 barrels. South America was third with 506,653 barrels; China fourth with 506,406 barrels; Newfoundland fifth with 306,744 barrels, the Irish Free State sixth with 297,900 barrels.

Trinidad and Tabago, in the British West Indies, bought only eight bushels of Canadian wheat last year, but took 271,324 barrels of flour. The French Islands of St. Pierre and Miquelon in the North Atlantic bought 22 bushels of wheat and 6,132 barrels of flour.

NEW METHOD OF PASTEURIZATION.

A new method of pasteurizing milk and cream has been invented by a Frenchman, Dr. Stassano, of the Pasteur Institute, Paris. This invention has just been perfected after some twenty years of experimenting, and the Danish engineering works at Silkeborg have secured the rights to utilize the patent throughout the world.

The method is somewhat different to what has hitherto been used in Denmark, where the law requires all milk and cream to be pasteurized to not less than 83 centigrades, so that all dangers of transmission of infectious disease may be counteracted. But in the process of heating milk to 83 degrees C., some of the albumen in the milk coagulates; the greater part of the carbonic acid gas contained in the milk escapes, which causes the lime and phosphate to precipitate, thus reducing the value of nourishment. The cream does not rise readily on pasteurized milk, and an extra quantity of rennet has to be used if cheese is made from pasteurized milk.

All these drawbacks of pasteurizing are eliminated by Dr. Stassano's method, by which the milk or cream is pumped through a system of tubes, where it is pasteurized on a surface of only one millimetre thickness, and at a temperature below 75 degrees C. The pasteurization is completed in ten seconds, the time the milk takes in passing through the tube.

The milk will retain all its original characteristics, although the experiments have established the fact that the sterilization is done thoroughly, more so than by the old method.

The Stassanonized milk is just as suitable for cheese-making as raw or unpasteurized milk, as the carbonic acid gas having escaped, the solids of nourishment are retained. There is no pasteurized taste to the milk, and the cream will rise just as on raw milk. Moreover, the Stassanonized milk retains all vitamins, which pasteurized milk does not.

Pasteurization by the new method is so thorough that milk cooled to 20 degrees C. will keep just as well as if cooled to 3 degrees C., after pasteurizing on the old method, which simplifies the plant required in city dairies. Moreover, evaporation, which on the old method may amount to 3 per cent., is also avoided by the new method. The invention will mean a revolution in the method of pasteurization, especially in city dairies and cheese factories, where the whole of the milk is pasteurized.

A Stassano plant has been installed in the Royal Danish Experimental Factory at Hillerød, so that a practical demonstration can be witnessed by Danish factory managers.



EGYPTIAN FLAX AND LINEN INDUSTRY.

Considerable attention has been devoted in recent years to the improvement of the grade of flax grown in Egypt. Government and private experiments with Belgian flax have proved so successful that efforts are being made to introduce this variety to replace the native flax, which is of very poor quality.

The two flax factories in Egypt put the fibre through only the first processes of its preparation for spinning. All of the flax is then sent to Europe for hackling, spinning and weaving. It is estimated that there are between 10,000 and 15,000 hand looms upon which the peasant women weave cotton, silk, and linen goods from imported yarns. The establishment of a linen textiles company has been authorized by the Government and is now in the course of organization.

ORCHARD AND GARDEN NOTES.

The Orchard.

E. E. Pescott, F.L.S., Pomologist.

As soon as the fruit is off the trees, the land should be well ploughed and left in a rough condition until the spring ploughing. If not already done, and the orchard conditions demand it, there is still time to put in a leguminous crop for green manuring purposes. But this should be done as early as possible, so as to give the crop a chance to make some good early growth. Soils deficient in lime or in organic matter are always benefited by a crop of green manures. Where stable manure is unprocurable, the green manure crop is the only means of adding organic matter to the soil.

PESTS AND DISEASES.

All second-hand and old cases should be thoroughly overhauled. It is preferable to do this work now, instead of leaving it till spring, when the rush of other duties will certainly prevent it being carried out. The cases, if not bad enough to be destroyed by fire, should be dipped for some time in boiling water. And this is not only for the killing of the codlin larvæ, but also to destroy larvæ or eggs of any scale or aphid, and also any spores of fungus diseases that may have found lodgment therein.

As soon as the trees have shed their foliage they may be sprayed with lime sulphur spray for woolly aphis, peach aphis, and the bryobia mite. And this should be done before pruning, so that in handling and carrying the prunings the pests will not be spread about the orchard to infect the clean portions.

In areas where Fruit Fly is suspected, a strict watch should be kept for perforated or infested fruit, all of which should be destroyed by boiling.

The Flower Garden.

Bulbs, tubers, and corms of spring-flowering plants should now all be planted. As they appear above ground, they should be protected from the ravages of snails and slugs, as these pests have a very great liking for these succulent growths. A good surface dressing of broken leaf or dust tobacco will effectually deal with these pests. In fact, the gardener who constantly uses tobacco, either in the leaf, stem, or dust forms, will very soon be in the happy position that slugs and snails will cause him no anxiety whatever. Besides, the tobacco has manurial properties which are also valuable. The remedy known as arsenate of calcium is an excellent killing poison for these pests.

Pansy and any other seedlings, also rooted layers and cuttings, may now be planted out into their permanent positions.

Sowings may also be made of any hardy annuals, such as antirrhinum, aquilegia, correopsis, Canterbury bell, dianthus, everlastings, foxglove, gaillardia, hollyhock, larkspur, leptosyne, lobelia, marigold, pansy, petunia, stock, sweet peas, verbena, wallflower, and primula.

The Vegetable Garden.

There should now be no untidy or undug beds in the kitchen garden. The vacant beds should all be well dug over and prepared for the planting of vegetables for use in spring. In digging, a top dressing of manure should be given; this may be dug in. All weeds, too, may be forked into the trenches, and covered well with soil as each spit or length is dug. A dressing of lime is very beneficial at this time of the year three or four weeks after the manure or weed dressing.

A start should now be made at cleaning out the asparagus beds. This vegetable is most popular, and yet one rarely met with in ordinary household gardens. It is supposed to be difficult to grow, but this supposition is not borne out, as, once established, a bed of asparagus is one of the most easily managed plots in the whole garden. Depth of good soil and plenty of manure are all that this plant requires.

In establishing a new bed, it is advisable to see that there is a good depth of 2 or 3 feet of rich, well-manured soil. If this is not present, the soil should be dug out to that depth, and thoroughly mixed and enriched with well-rotted manure before being replaced. A bed deeply prepared, and supplied with ample quantities of manure, should last without replanting for very many years. The young plants or crowns should then be planted in trenches, keeping the rows 2 or 3 feet apart.

An asparagus bed requires ample and direct exposure to the full rays of the sun. The asparagus should not be cut during the first season after planting; in fact, it is better to allow it to go uncut for two seasons. As little foreign weed growth as possible should be allowed in the beds, but, when they are not producing culinary asparagus, rows of lettuce, beans, radish, &c., may be grown between the crowns.

Towards the end of April the tops may be cut down, the beds cleaned, and a good top dressing of stable manure given. Chemical fertilizers, such as bonedust, sulphate of ammonia, and sulphate of potash, may be given as a substitute to organic manure. In the past it has been the custom to annually top-dress the beds with salt. It was supposed that, as asparagus in its native habitat was usually found in sandy soils near the sea coast, the plant required salt or a saline soil to produce successful results. It has been found, however, that salt is not at all essential to good growth, and that the plant will readily adapt itself and grow well in soils of not at all a saline character. Where potash has taken the place of salt, quite improved results followed.

Seeds of onion, turnip, cabbage, cauliflower, carrot, and parsnip may now be sown.

REMINDERS FOR MARCH.

LIVE STOCK.

HORSES.—Those stabled can be fed liberally. Those doing fast or heavy work should be clipped; if not wholly, then trace high. Those not rugged on coming into the stable at night should be wiped down and in half-an-hour's time rugged or covered with bags until the coat is dry. Old horses and weaned foals should be given crushed oats. Grass-fed working horses should be given hay or straw, if there is no old grass, to counteract the purging effects of the young growth. Attend to teeth and feet of horses to be turned out for the winter.

CATTLE.—Cows, if not housed, should be rugged. Rugs should be removed in the daytime when the shade temperature is above 60 degrees. Give a ration of hay or straw, whole or chaffed, to counteract the purging effects of young grass. Cows about to calve, if over fat, should be put into a paddock in which the feed is not too abundant. Calves should be kept in warm dry shed. Observe strict cleanliness in feeding to avoid losses and sickness incidental to calf-rearing.

All cattle should be provided with a lick consisting of salt 41 lb., bone flour 20 lb., sulphur 15 lb., lime (air slaked) 25 lb., and potassium iodide 5 oz.

PIGS.—Sows not already served should be put to the boar. Supply all pigs with plenty of bedding, and see that sties are warm and well ventilated. Supply sows liberally with grain. Castrate young boars as early as possible. Pigs should be highly profitable now, as pork is a good price. Rape, barley (especially skinless), oats, &c., may be sown for grazing during winter. Pigs should be supplied with plenty of charcoal and bone meal.

SHEEP.—Lambing is in full swing during the month of May—particularly in the warmer districts. Ewes should be kept in strong condition—neither too fat nor excessively fat. When the lambs are dropping, the most liberal treatment possible so far as concerns feed, shelter, and general attention pays; this care should be continued until the lambs are weaned.

Self-preservation being such a very strong factor in nature, it follows that badly-fed ewes will make bad mothers. Very old or very young ewes, if underfed, are usually very neglectful of their new-born lambs.

Late April and early May lambs may be marked towards the end of May. This work should be done in fine weather, and, if possible, most of the marking should be completed by, say, 3 p.m., so as to allow the lambs to mother before the evening sets in. It is advisable to yard lambs with their mother the night before marking, so that the work will not be undertaken when the lambs are overheated. The work should not be done in dirty yards, and the use of temporary enclosures is recommended. A rest after the operation is also advisable to prevent a lessening of the blood-flow from the wounds before travelling. Every precaution must be taken to prevent deaths from tetanus or lock-jaw, or from blood poisoning, which troubles frequently occur as a result of docking lambs in filthy yards, and from using filthy instruments. Before commencing, all knives, pliers, &c., should be thoroughly cleansed and disinfected in a solution of one part carbolic acid to twenty parts of water: they should also be frequently disinfected while in use.

Most flock-owners are agreed that the purse of male lambs should be drawn tight by the fingers, and the end completely severed. Slitting the purse is far too tedious, and is not recommended in any circumstances. In tailing, never draw tails tight, as the projecting bone will delay healing; particularly so if hot blades are used. Even when the cutting is done with a knife, enough loose skin should be left to cover the bone and veins so as to check the strong flow of blood, which usually occurs in lambs of well-fed mothers. Losses should be avoided in every possible way.

If not already done, sheep should now be crutched, as the young grass of May tends to cause scour. Wool-blindness in fine-wooled sheep may now need attention. In wet districts, dry paddocks should be used to the full extent. A sharp look-out must be kept for such pests as foxes, rabbits, eagles, dogs, &c.

POULTRY.—Feed animal food to forward pullets, about $\frac{1}{2}$ oz. daily, and equal parts heavy oats and broken maize at night. Add lucerne chaff to mash daily. See that fowl houses are free from draughts to avoid colds, also that they are free from red mites. Use Epsom salts and sulphur once a week to avoid Roup and Chicken Pox.

CULTIVATION.

FARM.—Dig main crop potatoes. Push on with ploughing and sowing of cereal crops, and peas and beans. Green fodder (as for April) may still be sown. Land for maize, potatoes, and other root crops should be prepared and manured. Flax may be sown. Transplant Chou Moellier and Giant Drumhead cabbage plants in rows 3 feet apart. Complete sowing permanent pastures with grasses and clovers.

ORCHARD.—Plough, manure; apply lime to orchard lands at rate of 5 or 10 cwt. per acre where soil is sour. Spray trees infested with scale insects, Woolly Aphis, and Bryobia Mite with red oil or crude petroleum. Clean all rough bark from trees. Commence pruning early varieties at end of month. Pick up and boil all fallen fruit.

FLOWER GARDEN.—Digging, manuring, and pruning; trench and drain where necessary. Dress the surface with lime. Continue to sow hardy annuals. Bury all leaves, soft-wood cuttings, and weeds. Continue to plant spring blooming perennials and other plants. Plant cuttings of carnations and roses.

VEGETABLE GARDEN.—Cut down and clean out asparagus beds. Apply manure and lime dressings. Cultivate deeply. Plant out seedlings and early potatoes; sow peas, broad beans, carrots, and parsnips.

VINEYARD.—Subsoil land for new plantations if not already done. This work should be carried out as long before planting as practicable. Vine-growers are warned against the too common practice of feeding off foliage after vintage. Any small advantage in the form of stock feed is only gained at the cost of a reduction in the following season's crop, owing to interference with accumulation of reserves which continues so long as the leaves remain green. Sheep, or other animals, should not be allowed into the vineyard until the leaves have changed colour. Early and deep ploughing is strongly recommended. Manures should be applied as early as possible. Peas, &c., for green manuring, should be sown without delay, in order to take advantage of early rains.

Cellars.—Rack or fill up (preferably the former) dry wines as soon as a lighted match, introduced at bung hole, is no longer extinguished. Sweet wines should also be racked and fortified to full strength.

BEE-KEEPING.

May is the last month during which bees may be examined, handled, and, if necessary, fed without risk of endangering the existence of the colonies or seriously interfering with their safe wintering. Supers (upper stories) should be removed and stored indoors in a dry place, care being taken that bee moths cannot get access to the combs. Where suitable storage room is not available indoors, the boxes of spare combs may be left outside, but should be placed underneath the box containing the cluster of bees and the entrance to the hive contracted to one-third or fourth of the summer width.

Small colonies should be reduced to one set of combs in a single story, and any combs not covered by bees are best removed if the amount of stores is insufficient and has to be supplemented by feeding sugar syrup. The amount of honey or sugar syrup necessary to carry bees safely through the winter varies according to the strength of the colony, the locality, and the earlier or later flowering of the spring flora of the district. It is therefore not possible to state what the amount should be; it may, however, be laid down as a general rule that the combs which the bees cover at this time of the year should be at least more than half-full of sealed honey or sugar syrup. When sugar syrup has to be fed to supplement the stores it should be of the density of ripe honey, or approximately two (by weight) to one of water. The simplest way of making syrup is to pour the measured quantity of dry sugar into the correct amount of boiling water, keeping it on the stove and stirring it till dissolved. The syrup should be given blood warm in a simplicity or frame feeder inside the hive.



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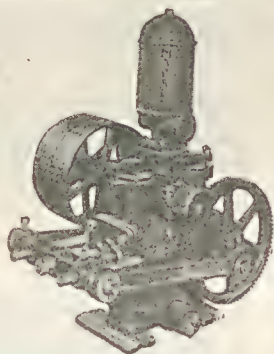
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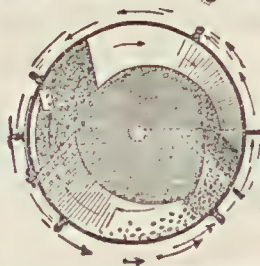
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(For Record of Yields of dams see Red Poll Herd Book.)

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Sire: Nicotine (69 A.A.) by Acton Dewstone (imp.) 9524 (4 A.A.).
 Dam: Tonga (253 A.) by Honingham Archbishop (imp.) 9702 (48 A.A.).
 Tonga's butter fat yields for 6 successive lactation periods are as follow:—1916, 341 lb.; 1917, 398 lb.; 1918, 419 lb.; 1919, 479 lb.; 1920, 428 lb.; 1921, 562 lb.

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Dam's Record (1st milking) 7144 lb. milk.			
Dam's	Dam's	14533 lb. milk	4 years average 12871 lb. milk.
Sire's	Dam's	10370	7 " " 9354 "
Sire's	D. Dam's	9510	" " 12 " " 8033 "
G. Sire's	D. Dam's	10215	" " 7 " " 9386 "
G.G. Sire's	D. Dam's	12565	" " 10 " " 8853 "
G.G.G. Sire's	D. Dam's	10088	" " 2 " " 9754 "

BIT O' 'BACCA (Vol. 3)

Sire: Nicotine (69 A.A.) by Acton Dewstone (imp.) 9524 (4 A.A.).
 Dam: Nicitana (311 B.) by Nicotine (69 A.A.).
 Nicitana's butter fat records for 6 successive lactation periods are as follow:—1918, 450 lb.; 1919, 396 lb.; 1920, 393 lb.; 1921, 465 lb.; 1922, 524 lb.; 1923, 536 lb.

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